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ON THE USE OF PETROLEUM BENZIN IN PHARMACY.

By L. Wolff.

(*Read at the Pharmaceutical Meeting, December* 19.)

Petroleum benzin has been frequently proposed and variously experimented with by different operators, with the view of substituting the much higher priced ether in preparing oleoresins, and has been repeatedly found to not answer the purpose intended for it. ("A. J. Ph.," 1872, page 208). Although its valuable solvent powers for fatty matter, wax and essential oils cannot be disputed, it fails to extract the resins and the active ingredients, which are of the utmost importance in oleoresins. Ginger treated with benzin yields an oil containing all the odoriferous properties thereof, but extracting none of the pungent-tasting resin for the remedial properties of which it is justly celebrated, and which subsequent to the benzin process is readily dissolved from it by ether or alcohol. Buchu under a like treatment, as reported by another contributor of this journal on this subject, gives an oily substance devoid of the diuretic properties of the leaves, though possessing their specific odor. Cubebs, though completely exhausted by it of its fixed and essential oils, fails to yield its cubebic acid to it, black pepper its piperin, and wormseed its resin and santonin; but all of the mentioned substances, and many more which have been subjected to the same process, are readily deprived of their fixed and essential oils, leaving them inodorous, seemingly dry and incoherent, powders, that are, if treated with alcohol, ether or chloroform, readily deprived of their resins, thus affording a method for obtaining them separate from wax, fixed and essential oils.

Its extraordinary solvency for essential oils destines benzin for an important place in pharmacy, and oils derived by its aid from cinnamon, cloves and other drugs are, if their odor is any indication of

their value, if not superior, certainly not inferior to the distilled oils of these articles.

The oils obtained by exhaustion with benzin and it subsequent evaporation are mixed with wax and fixed oils to some extent, which can easily be separated therefrom by dissolving in alcohol, in which the latter are insoluble, filtration of this solution, and either expulsion of the alcohol by evaporation at the moderate heat of a water-bath or, much safer and better, by mixing the filtered alcoholic solution with several times its bulk of water, when the essential oil will arise to the surface or subside beneath it, as its specific gravity may be.

The oils by this cold process have a beautiful aroma, superior to many of the distilled ones, and the easy manner of obtaining them may, without doubt, prove a valuable method for the pharmacist who cannot always procure in the market the oils he wants, and has no facilities for distilling them, besides giving him fair means to arrive at a quantitative estimate of the essential oil contained in an article under analysis.

The essential oil of parsley seed cannot thus be separately prepared by the aid of benzin, as it contains another peculiar oily substance, well known by the name of "apiol," which is soluble both in it and also alcohol.

A great deal of the apiol in the market, both in bulk and in capsules, is nothing more than an oleoresin of parsley seed, which can lay no claim whatever to its name, being of green color, insoluble, to a large extent, in alcohol, and congealing at ordinary winter temperature, all of which properties "true apiol" does not possess. Apiol has come into extensive use of late years, secured high praise as an emmenagogue, and is also claimed by its discoverers to be an antiperiodic but little, if any, inferior to quinia; but its high price, consequent to the expensive process as proposed by Messrs. Joret & Homolle, perhaps more than anything else, prevents its general introduction.

Powdered parsley seed, exhausted with benzin, and the liquid spontaneously evaporated, yields a mixture containing principally fixed oil, wax and apiol; the latter, alone, being soluble in alcohol, can readily be recovered therefrom hy repeated washings in stronger alcohol. The washings evaporated over the water-bath with a gentle heat, leave as residue "True Apiol," corresponding in every respect with the article

sold under the name of "Joret & Homolle's," having the advantage of its low price making it accessible to persons of limited means, as well as to the more favored by fortune, especially if it is not dispensed in capsules, for which there is no occasion, since it may be given dissolved in essence of peppermint, or in emulsion, disguised by the oil of the same name. Samples of "Apiol" prepared in this manner, have been tried by several prominent physicians, in their practice, and were pronounced to be equally as efficient as the imported French article.

Quite frequently the fixed oils much encumber the result of pharmaceutical operations, as is prominently the case in preparing the "Alcoholic Extract of Nux Vomica," which has often been noticed and given attention to by many writers. (See "A. J. Ph.," 1874, page 405; also, Prof. Procter on the same.) Nux vomica, if exhausted with benzin, yields a large percentage of a clear fixed oil, congealing at ordinary winter temperature, and the powder, if subsequently treated in the usual manner with stronger alcohol, gives an extract which offers no trouble by proper evaporation in reducing it to the dry state. The oil derived from the benzin exhaust, to make sure of not losing any strychnia or brucia that may be contained therein, should be repeatedly shaken with dilute alcohol until the washings fail to betray to the palate the specific bitter taste of their alkaloids; then the washings must be mixed with the extract in course of evaporation, and the whole reduced to proper consistency. By the ordinary way, the separation of the oil from the extract is at best a tedious matter, causing the loss of extract, and is never completely performed, thus preventing evaporation to dryness, which by the benzin process is readily effected.

Another article, which the pharmacist has frequently to purchase at an exorbitant price, is "Purified Oleic Acid," which has been much used of late in making the oleates now in use, and can be easily and at small expense prepared with benzin as solvent, in the following way:

Oil of sweet almonds, saponified with caustic potash and the soap decomposed with tartaric acid, is washed with hot water to separate the precipitated bitartrate of potassium from the mixture of oleic and palmitic acids. These are combined with litharge forming the oleomargarate of lead, from which the benzin dissolves the oleate of lead, leaving as residue the undissolved palmitate thereof. From the benzin solution the lead is precipitated by dilute hydrochloric acid, in form of chloride of lead, and on evaporation of the benzin, "Oleic Acid"

will remain sufficiently pure for pharmaceutical purposes, giving clear and permanent solutions with the red and yellow mercurial oxides, as high as thirty per cent. if necessary.

As crude commercial oleic acid can be bought at very low figures, it may be purified by combining it with litharge, deriving from it the oleate of lead, from which again, by the aid of benzin, the purified oleate can be separated, and as before stated, purified oleic acid prepared at but a small expense.

To gain the same end, the simplest way perhaps is to utilize the ready-made oleo-palmitate of lead, the officinal leadplaster, dissolve it in benzin and extract from it the oleic acid by precipitating the lead by aid of hydrochloric acid.

Oleic acid thus prepared has been used for some time, and found to answer better for the preparation of the oleates than the article sold by some of the manufacturing chemists.

The above results by no means limit the utility of petroleum benzin as a solvent and important pharmaceutical factor, but they will show that this refuse article, of comparative little commercial value, which has been applied to but little more than the removal of oil, grease or paint stains, may be turned to good account by its very deficiency to act like ether or similar substances as a general solvent for both fats and resins.

Philadelphia, Dec. 1st, 1876.

PRACTICAL NOTES.

(*Extracted from theses presented to the Philadelphia College of Pharmacy in* 1876.)

Aquæ Medicatæ.—Wm. Wesley Trout has examined the various methods proposed for the preparation of medicated waters, and gives the preference to those prepared by distillation. When this process is not practicable, the "hot water process" is considered the best, as yielding a pure and strong water. Very acceptable waters may be obtained by the use of the elæosacchara of the European pharmacopœias, which, for this purpose, the author proposes to prepare by using 15 minims of the oil to three drachms of sugar, triturating them together and then adding one pint of distilled water gradually, with constant trituration. Using paper pulp for dividing the valatile oils, the author obtained the weakest waters [probably because too much

paper pulp was used.—EDITOR]. Purified animal charcoal, used with the oil, also yields good waters.

Walter Theron Baker has principally operated with cinnamon and camphor water, and prefers, particularly for the latter, well-burned granulated wood charcoal; the kind used having been obtained from Jersey pine. ℥iss of the charcoal to ℥i camphor was found to be sufficient.

Preservation of Syrups.—Allen Spengler has found that a little salicylic acid [how much?] added to syrupus scillæ comp. would preserve it for months, while portions of the same syrup, kept under the same conditions, except that no salicylic acid had been added, were completely spoiled.

Syrup of Ipecacuanha.—In preparing this syrup Wm. H. Righter, Jr., aims first at obtaining a fluid extract which will mix with syrup without producing a precipitate, which is effected by diluting the officinal fluid extract with water, filtering and evaporating to the proper measure. By adding one fluidounce of this purified fluid extract to three fluidounces of syrup of tolu and then twelve fluidounces of simple syrup, an efficient syrup of ipecac is obtained, which has a pleasant flavor and is not prone to fermentation.

Syrup of Wild Cherry Bark, possessing a deep brown-red color and a strong odor of hydrocyanic acid, is obtained, according to John Ritter, by first moistening the five troyounces of powdered wild cherry bark with a mixture of two fluidounces of glycerin and one-half a fluidounce of distilled water, allowing it to stand in a closed vessel for 24 hours and then proceeding according to the directions of the "Pharmacopœia."

Variation in Fluid Extracts.—Clayton K. Smith has made some comparative experiments in relation to fluid extracts, by evaporating four ounces with a gentle heat to a pilular consistence, and weighing this residue. Whether, and in what manner the amount of glycerin or sugar was determined, is not stated. The results cannot be claimed as possessing any analytical value, but they illustrate very forcibly the variation of commercial fluid extracts. Nos. 1, 2 and 3 in the following table were from three manufacturers in New York; Nos. 4, 5 and 6, from three Philadelphia houses. The extracts yielded by four [fluid?] ounces weighed as follows:

	1	2	3	4	5	6
Extractum Gentianæ fluidum,	360 grs.	800 grs.	1070 grs.	720 grs.	1440 grs.	850 grs.
" sennæ "	840 "	1010 "	720 "	540 "	1380 "	825 "
" rhei "	480 "	1235 "	1210 "	960 "	1500 "	800 "
" scillæ "	1000 "	1068 "	1300 "	800 "	1680 "	1080 "
" ergotæ "	480 "	420 "	550 "	480 "	780 "	780 "

Solubility of Drugs.—Philip J. Laver has determined the amount of moisture in the following air-dried powdered drugs by keeping them in an air-bath at a temperature of 110° F. until they ceased to lose weight; those containing volatile oil were dried over lime in an air-tight box. The amount of soluble matter was ascertained by percolating 960 grains of the air-dry drugs with the menstrua directed by the "U. S. Pharmacopœia," using sufficient quantities for preparing the officinal tinctures; the residues were afterwards dried as before, and the difference in weight, after deducting the previously ascertained amount of moisture, was regarded as the weight of the soluble matter contained in the tincture. In this manner the following figures were obtained:

960 grs. of airdry	Ginger,	Valerian,	Lobelia,	Calumba,	Sanguinaria,	Cinchona,	Arnica,	Digitalis,	Krameria,
Lost in drying,	40	100	74	102	106	100	98	72	60 grs.
Yielded soluble matter,	55	139	146	151	213	154	192	328	440 "
Or pr. fluid oz.	$6\frac{7}{8}$	$8\frac{11}{16}$	$9\frac{1}{8}$	$9\frac{7}{16}$	$13\frac{5}{16}$	$14\frac{7}{16}$	18	$20\frac{1}{2}$	$27\frac{1}{2}$ "

Tinctura Cinchonæ Comp.—Wm. D. Robinson has examined a number of specimens of this tincture, which had been obtained from various sources. After some preliminary experiments, Winkler's process was decided upon, and 5 fluidounces and 100 minims of the tincture, representing 250 grains of red cinchona, were treated with the same weight, each of slaked lime and animal charcoal, the sediment repeatedly treated with cold alcohol, and the mixed alcoholic liquids evaporated. Regarding the residue as nearly pure alkaloids, the barks used in preparing the tinctures were found to contain respectively the following percentages thereof: ·287, ·81, ·871, 1·03, 1·09, 1·13, 1·20, 1·27, 1·38, 1·62, 1·71, 1·78, 2·05, 2·13, 3·09, 3·11 and 4·46, showing a great variation in the quality of the barks employed.

AQUÆ MEDICATÆ.

By George W. Kennedy, Ph.G.

(*Read at the Monthly Meeting of the Alumni Association of the Philadelphia College of Pharmacy, Dec. 7th.*)

The process of medicated waters of the Pharmacopœia when prepared in strict accordance with the directions, is not only pharmaceutically objectionable, but also therapeutically and chemically. I propose to take up cinnamon water, discussing it briefly, and pointing out the objections.

1st. When freshly prepared, it is rather pleasing in appearance to the eye, but in a short time it changes, becoming to a certain extent turbid; precipitation soon takes place, and an appreciable amount of deposit is formed at the bottom as well as on the sides of the bottle in which it is kept, thus rendering it unsightly and displeasing to a pharmacist who takes pride in his preparations.

2d. The precipitation is not of so much importance therapeutically, since the water is scarcely ever given for its medicinal virtues, although it certainly possesses some when properly prepared, owing to its pleasant aromatic and carminative properties, its principal employments as an adjuvant to other medicines, the taste of which it masks and disguises satisfactorily.

3d. The chemical objection to the ordinary process with carbonate of magnesium, is that the deposit spoken of above consists of cinnamate and carbonate of magnesium. The cinnamic acid being the result of oxidation of the oil which consists principally of cinnamic aldehyd (C_9H_8O) and variable proportions of hydrocarbon, the oil being of such a composition that it readily absorbs oxygen from the atmosphere, thereby becoming contaminated with resin and cinnamic acid.

The principal objection to medicated waters, prepared with magnesia, when prescribed with the salts of the alkaloids, is that precipation of the bases takes place, thus making it very dangerous to the patient who may get an overdose at any time.

Mr. Thomas H. Powers as early as 1833 ("Am. Jour. Pharm.") called attention to the solubility of magnesia, and recommended the addition of a small quantity of acid to prevent precipitation. Since then over forty-three years have passed away, and this very important matter has been to a very great extent overlooked, at least by the framers of the

"Pharmacopœia." It gives me much pleasure to say that in looking over our pharmaceutical literature, quite a number of apothecaries will be observed to have been busily engaged in providing a substitute for the magnesia to remedy this defect. Various recommendations have been made from time to time as improvements, the majority of which are decisively good suggestions of the substances recommended to take the place of magnesia. I would enumerate the following: Animal charcoal, silica, pumice stone, glass, kaolin, chalk and paper pulp; then it has been proposed by several writers to dissolve the oils in boiling water, which also seems to answer the purpose admirably and furnish satisfactory products, provided the oils are fresh and not in a oxidized condition.

My object here is to exhibit a vial of cinnamon water, in compliance with a request at our last meeting, as prepared from distillation with the oil, not that I advocate that process altogether, but simply to show what can be done by distillation. This water, upon examination, will be found to be strongly impregnated with the odor, and I believe by diluting with an equal part of distilled water, an article far superior in odor to that made by the ordinary process will be obtained. It is almost colorless, whilst that made with magnesia is of a straw-yellow color. When medicated waters are prepared from the drug, a finer preparation is obtained than when made from the oil; there is a delicate fragrance and flavor about the drug, which is not found in the oils, even in the freshest possible condition in which they can be obtained. Essential oils generally do not keep long; they soon oxidize, and a foreign substance is formed, which to a certain degree unfits them for medicated waters, although if great care is taken of them they will answer the purpose very well, and will please the most particular apothecary. In concluding my remarks, I would say, that the "Pharmacopœia" committee should be reminded of the necessary and absolute importance of making a change in the preparations of medicated waters, which should be made only by distillation from the drug.

Potsville, Pa.

ACIDUM PHOSPHORICUM DILUTUM.

By Rich. V. Mattison, Ph.G.

(*Read at the Pharmaceutical Meeting, December 19th.*)

To the average reader it seems hardly possible that anything new can be said on this subject, so thoroughly has it been discussed n

this discussion commended upon by recent writers. The "Pharmacopœia" directs either of two processes, directing preferably the oxidation of phosphorus by nitric acid, and the subsequent dilution to the proper specific gravity. The objection to this process, we believe, comes from only one source, viz.: the retail druggist to whom it is both dangerous and insufferably tedious, requiring constant watchfulness regarding temperature, "eternal vigilance" being the only price of safety, beside being a source of constant expense through the breakage of funnels, capsules and the other paraphernalia of the phosphoric acid apparatus usually found at the command of the pharmacist. It is, however, the process usually followed by manufacturers, because of its most striking allurement, viz.: cheapness; and for their benefit we will describe a piece of apparatus employed by ourselves for the past two years in the manufacture of this preparation.

We place in the yard attached to the laboratory a tub of twenty-five gallons capacity, into which we place some smooth bricks, and upon these we place a graphite crucible of say ten gallons capacity, such as are used in the steel works for melting and refining of cast steel, and upon the top of this we insert a funnel and carefully lute the edges with flaxseed meal or clay—having previously placed in the crucible the quantity of phosphorus we wish to convert into phosphoric acid. Into the spout we place a glass tube reaching to the bottom of the crucible, and at the apex insert a small funnel; the apparatus is now complete with the exception of the method of applying heat.

On the upper floors of the laboratory are the steam-pans from which the condensed steam passes through the drip-cock either to the boiler tank or to the ground below. Now we take a small steam-pipe and attach one extremity to the drip-cock and allow the other to terminate into the tub in which stands the acid apparatus. We start the process by putting the phosphorus into the crucible, luting the funnel as before described, and through the tube in the spout, adding the quantity of nitric acid, slightly diluted, that may be requisite. We then allow the condensed steam to fill the tub, and pay no more attention to it excepting to add water or nitric acid as occasion may require. Through the daily use of the steam-pans, stills, etc., there is abundance of condensed and live steam passing into the tub, the water in which is thereby kept constantly hot, without requiring any attention, and the process may go on for weeks without the slightest danger or annoyance to the

motive power which is furnished at a minimum of expense by the waste product (condensed steam) which would be utilized for no other purpose.

A note here regarding the practical working of the first process by the pharmacist. The case in point is this: We had occasion some time ago to drop into the store of a gentleman well known for his pharmaceutical attainments, and who makes it an item of especial pride that "he prepares his dilute phosphoric acid from phosphorus direct." Well, at the time of our call we beheld the "youngest apprentice," we judged from the exceedingly crude methods of manipulation he practised, at work on the officinal process in question. To say "he took no note of time" is inapplicable, but that "he took no note of *temperature*" certainly is, for his chief design seemed to be to burn the largest amount of phosphorus in the shortest possible time—the phosphorus being mostly on fire, and dense clouds of phosphoric anhydrid issuing from the mouth of the funnel escaped up the chimney besides clouding the atmosphere of the store. Upon our modestly offering the suggestion that the proper place for the anhydrid was in the capsule instead of the atmosphere, the proprietor rather curtly informed us that "Oh, he (the youngest apprentice before referred to) knows all about it; *he's made it before.*"

These are the facts; the commentary is that if an educated pharmacist is unable to prepare phosphoric acid by this process without losing 50 per cent. of the anhydrid, the acid thereby being proportionately reduced in strength, then the process is not a proper one to be left in the hands of druggists generally for the manufacture of this preparation.

The second process of the "Pharmacopœia" is unsuitable, and should not, on any account, be followed, because of the fact that all the metaphosphoric acid of the market is contaminated with quantities varying from 15 to 35, or more, per cent. of sodic phosphate, which is added to the pure metaphosphoric acid by the German manufacturers for the purpose of causing it to concrete into those beautifully transparent, solid masses, in which shape it is more easily handled commercially.

The objections to this process then are very grave ones, viz.: that the metaphosphoric acid is largely contaminated with sodic orthophosphate which, upon heating, is converted into pyrophosphate, and the resulting acid formed by following the "Pharmacopœia" process is not

only deficient in strength, which varies accordingly with the amount of sodic salt contained therein, but the presence of the pyrophosphate precipitates the corresponding ferric salt when the acid is added to solutions containing iron.

A third process, which is known as "Markoe's process," consists in acting upon phosphorus with bromine in the presence of water. With care the process is esteemed a safe one, but the fact remains that at least one experienced experimenter has had proof positive of the contrary, and we would not recommend the process as one to be left in the hands of the inexperienced, though that it does furnish excellent results at a limited cost is undeniable.

The fourth process is the one we propose for the next "Pharmacopœia." It is not designed for the manufacturer, but for the pharmacist. Its chief feature is simplicity, combined with ease and rapidity of execution. Its simplicity depends upon the ease with which amorphous phosphorus is converted into orthophosphoric acid by the action of nitric acid, and we would propose the following modification of the first officinal process:

Take of Phosphorus (amorphous), . 370 grains;
Nitric acid, . . 5 troyounces or q. s.;
Water, sufficient quantity.

Add the nitric acid to eight fluidounces of water in a porcelain capsule, and to this add the amorphous phosphorus; raise the temperature of the mixture to boiling, and evaporate until the solution has lost the odor of nitric acid. (It would be almost superfluous to caution the operator at this period regarding the passage of ortho- to pyrophosphoric acid by increased temperature.) When perfectly free from nitric acid it should be diluted to the measure of twenty fluidounces, or to the requisite specific gravity, the arsenic and other impurities, if present, having been previously removed.

Of a sample of acid prepared by this process one hundred grains were neutralized by twenty-four and six-tenths grains of perfectly dry crystals of acid potassium carbonate; solution of ammonic nitrate gave a yellow precipitate; it did not coagulate albumen or precipitate with tincture of the ferric chloride when mixed in various proportions.

The operation is finished in fifty minutes, and if judicious note of temperature is taken the finished product is free from pyro- or meta-acids, perfectly free from danger either to person or property, no gauze

spectacles or additional insurance, a process that the youngest apprentice cannot blunder over; easy, efficient and economical, what more could be desired?

Philadelphia, December 1st, 1876.

OIL OF CINNAMON LEAVES.

By N. A. Kuhn.

(*Read at the Monthly Meeting of the Alumni Association, P. C. P., Dec. 7th,* 1876).

This oil has a sharp, biting taste, with an odor reminding at first very faintly of nutmegs, afterwards strongly of cloves, but if heated with KHO that of cinnamon is predominant. The color is near that of true oil of cinnamon, and the specific gravity is about the same, it being a little heavier than water, sinking when put in that liquid.

It does not fulminate with iodine, does not give any color with nitroprusside of copper, nor with hydrochloric acid; with nitric acid a brown color similar to an iodine stain; with sulphuric acid a violet purple, which is turned brown by nitric acid, as the oil treated with the latter alone is.

A portion was treated in a test tube with a small portion of sulphuric acid and potassium bichromate. In the vapors from this a piece of bibulous paper that had been dipped first in guaiac tincture, then in a weak solution of cupric sulphate, was turned blue, showing the presence of hydrocyanic acid. Care was taken that the oxidizing agent was not in excess, else the benzoic aldehyd, which was generated from the cinnamic acid contained in the oil, would be converted into benzoic acid, which is odorless, and would not give any reaction in the state of vapor.

This reaction, showing the presence of cinnamic acid, was obtained from the distillate of the next also.

Another portion of the oil, after adding some potassa, was heated and the vapor condensed. The part remaining was treated with dilute hydrochloric acid and filtered. To the filtrate nitric acid was added and the liquid concentrated, when a reddish-brown resin and star-shaped crystals, resembling oxalate of ammonium, were obtained.

A solution of the crystals yielded a precipitate with calcium chloride which was insoluble in acetic acid, but soluble in hydrochloric acid

showing an oxalate. This with the brown resin indicates that eugenic acid ($C_{10}H_{12}O_2$) was present.

When the nitric acid was added, an odor so familiar was produced that it took some time to place it. It was that of aromatic vinegar, indicating that acetic acid was also among the products of the decomposition of residue left in the test tube.

SOLUTION OF AMMONIO-CUPRIC SULPHATE AS A TEST FOR GRAPE-SUGAR.

By Fred. B. Power.

In some experiments with grape-sugar, the action of a very dilute solution of ammonio-cupric sulphate was observed; this reaction being of some interest, and, to my knowledge not having been previously announced, the following observations may be noted:

If a drop of the ordinary test solution of cupric sulphate (one part of the salt in fourteen parts of water) be allowed to fall into a test tube, a slight excess of ammonia water above that required for the resolution of the precipitate, added, and further diluted with a small quantity of water, by the addition of a few drops of a solution of grape-sugar, and heating over a gas flame to the boiling point, the liquid becomes perfectly decolorized in a few seconds. It was found that a solution containing *one* drop of a solution of cupric sulphate of the above strength, which forms a deeply tinted-blue liquid upon the addition of an excess of ammonia water, becomes perfectly colorless in transmitted and reflected light by heating with *four* drops of a solution of *one* gram of grape-sugar in 100 cubic centimetres of water; this degree of dilution of the saccharine solution seems to approach the minimum for the attainment of a marked result in the use of this test, and corresponds approximately to the detection of 0·005 gram or $\frac{1}{13}$ grain of crystalline grape-sugar.

The decolorized solution after standing for a few hours exposed to the air again assumes its original blue color.

Milk-sugar and dextrin produce the same reaction as grape-sugar, although a somewhat more concentrated solution of dextrin is required.

Pure mannit, which has no reducing effect upon the solutions of Trommer and Fehling, has also no effect upon the ammonio-cupric solution.

Cane-sugar is incapable of affecting this change even in highly concentrated solution and after heating for a much longer time with the ammonio-cupric solution, although it was observed that when associated with grape-sugar a smaller amount of the latter is required for the decolorization of the liquid.

The solution of this salt of copper, as will be observed, being considerably less sensitive than the test solutions of Trommer and Fehling, can by no means supply the place of these valuable reagents, but may add one more to the number of the corroborative tests now in use.

It may also be mentioned in this connection that the solution of ammonio-cupric sulphate has met with a somewhat similar application by virtue of its capability of converting morphia into a basic oxydation product, *oxy-morphia*, $C_{17}H_{19}NO_4$, which, according to Hesse, is identical with another alkaloid of opium, having the same chemical composition, *pseudo-morphia*, and which is insoluble in ether, alcohol and water.

DANGEROUS CANDY.

By H. G. Debrunner.

On a recent trip to Massillon, O., I happened to pass the show-windows of a fine confectionery store, where a beautiful display of candies wrapped in brilliantly-colored paper of all shades could be seen. My attention was especially directed to some "kisses" enclosed in green paper. Suspecting that the pigment might be Paris-green, I purchased a small quantity of the suspected candy, and subjected the paper in which it was wrapped to a careful chemical analysis, with the following alarming results:

Size of one piece of paper,	$3 \times 2\frac{1}{2}$ in.;	
Average weight of one piece of paper,	0·302 grm.	(5 grains);
Quantity of pigment in one paper,	0·062 grm.	(1 grain);
Quantity of arsenic, As_2O_3, in one paper,	0·032 grm.	($\frac{1}{2}$ grain);
Quantity of cupric oxide, CuO, in one paper,	0·022 grm.	($\frac{1}{3}$ grain);
Corresponding quantity of met. copper, Cu,	0·017 grm.	($\frac{1}{4}$ grain).

Paris green, aceto-arsenite of copper may be considered a combination of arsenite of copper, or Scheele's green and acetate of copper, or verdigris, thus uniting the poisonous qualities of copper-salts and arsenic.

The qualitative analysis (presence of copper, acetic acid and arsenious acid) led to the conclusion that the pigment of these papers really was the above named and previously suspected substance.

The fatal dose of arsenic for an adult is from 2 to 5 grains; a dose of half a grain, however (as contained in one paper of the above size), will already produce severe symptoms of poisoning; the medicinal dose, according to the "U. S. Dispensatory," being $\frac{1}{20}$ to $\frac{1}{10}$ of a grain for an adult.

The poisonous pigment is made to adhere to the paper by a simple mechanical process—the adhesion is but very slight, and friction, as well as moisture, will loosen it entirely. If such candy is given to children, particularly to small ones, who may take the colored paper in the mouth, or handle it with wet hands, they are in danger of being poisoned.

It is difficult to understand how people can be so devoid of conscience and reckless to employ for such a purpose such dangerous paper, or if it is ignorance, is it excusable? Is such a practice too trifling a matter for the Boards of Health to notice?

Otto, the eminent German toxicologist, mentions a case where two children lost their lives through a Christmas present — a toy painted with Paris-green. The danger is still greater if eatables are enclosed in such poisonous paper.

It would be superfluous to dwell on the dangerousness of wall-paper, lamp-shades, artificial flowers, fancy letter-paper, gauze, etc., colored with Paris green; but it should be considered a duty to humanity to direct the attention of the public to such facts like the above.

The analysis: five pieces of paper were treated with nitric acid to dissolve the pigment, converting at the same time arsenious into arsenic acid. The filtered solution was neutralized with caustic soda, the copper precipitated with sulphide of sodium as sulphide of copper, the precipitate washed, dried, ignited with the usual precautions and weighed as cuprous sulphide, Cu_2S.

Arsenic was precipitated from the filtrate on addition of hydrochloric acid and sulphuretted hydrogen as trisulphide of arsenic. It was filtered off, washed, and redissolved in nitric acid, thus forming arsenic acid. The clear solution was diluted to 100 cc.

20 cc., representing one piece of paper, were again precipitated with

sulphuretted hydrogen as trisulphide of arsenic, As_2S_3, and weighed on a tared filter.

20 cc., heated with sulphuric acid, H_2SO_4, and then introduced in Marsh's apparatus, yielded very large arsenic mirrors.

20 cc. were precipitated with chloride of ammonium, ammonia, and chloride of magnesium. The voluminous precipitate was filtered off, etc., dried at 212°, on a tared filter, and weighed, as $NH_4MgAsO_4+H_2O$, ammoniated arseniate of magnesium.

The remaining 40 cc. were used for different qualitative tests.

The total amount of pigment was determined by extracting one paper with ammonia,[1] and evaporating the blue filtrate on a watch-glass.

From five papers, of before-named size, I was able to extract a globule of metallic copper with the blow-pipe, weighing 0·076 grm., $= 1\frac{1}{4}$ grain. I also have several arsenic mirrors, arsenious acid (in beautiful octahedrons and tetrahedrons, visible with the microscope), sulphide of arsenic, etc., as corpora delicti, on hand, each sample being extracted from one piece of this candy-paper.

Owing to the fact that "Paris green," if perfectly soluble in ammonia, is considered "pure," manufacturers often adulterate it with arsenic, which does not interfere with the solubility. This seems to have been also the case with the pigment analyzed, the amount of arsenic found being rather large.

The analysis was executed with care, and the correctness of the results confirmed by duplicate assays.

Navarre, O., Dec. 4, 1876.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Comparative Assay of Male Fern.—The rhizomes collected in the spring and fall are, according to Kruse, of a deeper green color and a stronger odor than those collected in summer. To ascertain the variations in the composition of the rhizome collected at different seasons in 1874, comparative assays were made, with the following results:

[1] Practical test for purity of Paris green, which is entirely soluble in ammonia.

	Rhizome collected. April.	July.	October
Moisture of air dry rhizome,	15·7	13·4	13·5
Moisture in powder, kept in damp atmosphere,	24·5	23·7	28·1
Ashes of rhizome dried at 110° C.,	2·2	2·5	2·5
Extract obtained first with water,	36·4	25·4	35·9
afterwards with alcohol,	21·6	22·8	8·5
Extract obtained first with alcohol,	27·3	26·1	39·5
afterwards with water,	14·7	17·0	10·7
Extract obtained first with ether,	10·3	12·4	11·5
then with alcohol,	17·8	16·7	24·5
and with water,	12·8	6·9	14·8
Extract obtained with gasolin (light petroleum ether),	9·3	8·4	9·1
afterwards with alcohol,	16·9	15·2	19·4
Extract obtained with rectified petroleum,	14·	11·4	17·2
then with acetic ether,	4·9	5·1	4·9
Starch, determined as sugar,	28·2	22·7	15·4
Sugar,	1·0	1.4	2·8
Tannin, determined with copper acetate,	4·6	6·9	5·9
lead acetate,	9·2	9·8	11·7
Filix red, extracted by ammonia from rhizome previously exhausted by water,	5·2	6·9	7·8
Mucilage and albumen, the alcoholic precipitate in the syrupy infusion,	5·25	2·35	2·13

The author found it impossible to obtain the whole amount of filicic acid present suitable for quantitative determination. Rhizomes collected in September, 1875, gave results in extracts and in the composition of the ashes, agreeing closely with the results obtained from the October rhizome. The ashes contain between 19 and 20 per cent. of phosphoric acid, 10 to 11 per cent. silica, 5·5 per cent. sulphuric acid, and some chlorine and carbonic acid, combined with potassium, calcium, magnesium, iron, manganese and sodium.—*Archiv d. Phar.*, 1876, July, 24–32.

Pyrethrum carneum.—According to Joussel de Bellesme, the poisonous properties of the insect powder is not due to the volatile oil, but to a crystalline principle which he considers to be an alkaloid.—*Jour. de Phar. et de Chim.*, August, 1876.

The oils of the aurantiaceæ (lemon, bergamot and orange) deposit, on standing, a white sediment, which frequently, perhaps always, contains lead. Dannenberg, who confirms this observation of G. Buch, made in 1846, has as yet not been able to collect a sufficient quantity of the precipitate to determine the nature of the acid with which the lead is combined.—*Archiv d. Phar.*, Sept., 1876, 258.

Resina Guaiaci Peruviana Aromatica.—Gehe & Co. have sold under this name for about 15 years, a yellowish-brown resin, which they obtained from Paris, but could ascertain nothing regarding its origin. In thin splinters it is transparent, glossy and of a wine-yellow color; the recent powder is yellow. It fuses at 90° C., has a strong odor reminding of rue, anis and lemon, which does not solely depend upon the volatile oil, and an acrid not agreeable taste. It does not turn blue or green on exposure, or by oxidizing agents. It dissolves readily and almost completely in alcohol, ether, chloroform and carbon bisulphide, the solutions leaving on evaporation an amorphous residue. Sulphuric acid colors the resin red, nitric acid decomposes it.

Adolf Kopp obtained from it by distillation with water 4 per cent. of a yellow neutral volatile oil, having an odor reminding of peppermint and lemon. On rectification, the boiling point rose from 168° to 280° C. It contains oxygen, the hydrocarbon having the composition $C_{10}H_{16}$.

On treating the resin with fusing potassa, protocatechuic acid appears to be formed. With nitric acid a white nitro compound is obtained and finally oxalic acid. Among the products of the dry distillation of the resin was a volatile oil, which acquired a deep blue color in that portion the boiling point of which rose above 260° C.—*Archiv d. Phar.*, Sept., 1876, 193–206.

Sulphomolybdate of Ammonium as a Reagent.—J. B. Nagelvoort has experimented with the various reagents recommended for the detection of morphia, more particularly with iodic acid, with Husemann's test (orange color, on adding nitric acid to the solution in sulphuric acid), and Schneider's test ("Amer. Jour. Phar." 1873, p. 545), but he found Buckingham's test (Ibid., p. 150) far more delicate. He has also examined the behavior of the latter test to several other principles and confirmed, in the main, Buckingham's results. To avoid the decomposing influence of the light, the tests were applied in the dark, whereby the final changes of the color appear to be greatly retarded, the light or dark blue color being in some cases produced only after one or two days. ·00001 grm. of morphia was detected by the beautiful purple color instantly produced by the reagent, which is ten times more delicate than Froehde's similar reagent. Mixed with milk-sugar ·00003 morphia could be detected, milk-sugar alone turning blue only after some minutes' contact with the test liquid. Starch granules become blue very rapidly with Buckingham's test, the liquid remaining colorless.—*Archiv d. Phar.*, Sept., 1876, 249–254, *from O. I. Tijdschr.*

Clarified Honey is obtained by E. Dannenberg, of unexceptionable quality, by diluting the crude honey with half its weight of water, boiling for 15 or 30 minutes, according to the quantity operated upon, the scum being carefully removed, and then adding five or six times sufficient cold water to interrupt the boiling for not over half a minute. After boiling for another 15 minutes, the hot honey is strained and evaporated. Thus prepared the author has kept the honey unaltered for over two years.—*Archiv d. Phar.*, Sept., 1876, 276.

Extract of Hyoscyamus.—R. Huguet observed in an old extract a large number of crystals, the principal form of which was the regular octohedron, in some cases with combinations of the cube. By incineration he obtained between 22·28 and 31·5 per cent. of fixed residue, containing from 5·12 to 8·4 of potassium chloride.—*Rép. de Phar.*, 1876, p. 545.

Mercurial Ointment.—E. Dannenberg recommends for the rapid extinction of the mercury to triturate 500 grams with about 80 grams of lard and 15 to 20 grams of olein, after which the remaining fat is added.—*Archiv d. Phar.*, Sept., 1876, 256.

The Preparation of Sulphide of Iron is best accomplished, according to Dr. Méhu, by mixing two parts of finely powdered pyrites or bisulphide of iron with one part of powdered iron, and heating the intimate mixture in a Hessian crucible to redness for half an honr. It is unnecessary to increase the heat to fusion ; a grey mass is obtained which is easily pulverized, and in contact with hydrochloric acid, copiously evolves sulphuretted hydrogen.—*Zeitschr. d. œst. Apoth. Ver.*, 1876, p. 413.

Adulterated Sulphate of Quinia has been noticed in France by Dr. P. Jaillard ; it contained the almost incredible amount of 70 per cent. of potassium nitrate. The adulterated article had the appearance of the pure salt, but possessed a bitter and saline taste, was to a large extent soluble in water at the ordinary temperature, only in part soluble in strong alcohol. The aqueous solution heated with an acid solution of ferrous chloride, oxidizes the latter readily. The salt heated upon the blade of a knife deflagrates and leaves a white ash.—*Jour. de Phar. et de Chim.*, Nov., 1876.

Reactions of Phenol with some of the Cinchona Alkaloids.—By O. Hesse (Liebig's Annalen, clxxxii, 160–163).—When equal

molecular weights of cinchonidia and phenol are dissolved in dilute alcohol and mixed, an oily liquid separates and on standing becomes crystalline; if strong alcohol be employed, fine crystals are produced, constituting colorless, glassy, odorless prisms, stable in the air, but evolving phenol on heating: these have the composition $2C_{20}H_{24}N_2$-$O.C_6H_6O$, whence the author terms the compound *semi-phenol cinchonidia*; the whole of the associated phenol is expelled at 130° and is lost on repeatedly crystallising from alcohol. This substance is capable of combining with acids, *e. g.*, sulphuric acid forming the double phenolo-sulphate formerly described (this Journal, 1876, ii, 313)[1]; in alcoholic solution it has a strongly alkaline reaction, and precipitates ferric oxide from a solution of a chloride. Addition of excess of acid causes the separation of phenol, a cinchonidia salt being formed.

If 2—3 molecules of phenol are employed for one of cinchonidia, crystals are obtained containing more phenol, being represented by the formula $2C_{20}H_{24}N_2O,3C_6H_6O$; whence the author terms this body *sesqui-phenol cinchonidia.* No more phenol becomes added on recrystallization from alcohol containing much phenol; on solution in hot alcohol, or on gentle heating, the crystals are partly decomposed, with evolution of phenol; when one part of sesqui-phenol cinchonidia is dissolved in about five of alcohol, the crystals which separate have about the composition of *semi-phenol cinchonidia;* with larger quantities of alcohol a smaller amount of phenol is retained, and finally pure cinchonidia separates. On saturating the hot alcoholic solution with sulphuric acid, cinchonidia phenolo-sulphate $2C_{20}H_{24}N_2O.C_6H_6O.H_2SO_4.4H_2O$ crystallizes out on cooling.

Although quinia and cinchonidia readily combine with phenol, the dextro-rotatory cinchona alkaloids, cinchonia, quinidia and quinamina crystallize unchanged from an alcoholic solution containing phenol, whatever may be the proportion between the alkaloid and phenol present.—C. R. A. W. *in Jour. Chem. Soc.*, Dec., 1876.

Solubility of Salicylic Acid.—B. Kohlmann states that 300 parts of water fail to retain one part of salicylic acid in permanent solution, even at the summer temperature. The addition of sodium phosphate and similar salts having an alkaline reaction is considered to be inadmissible, because the antiseptic properties are thereby impaired. Glycerin and alcohol do not materially increase the solubility in water unless added in considerable proportion. A very convenient solvent is

[1] "Amer. Jour. Phar.," 1876, p. 325.

found in the officinal solution of ammonium acetate, which will dissolve 20 per cent. of salicylic acid. The simplest way to effect the solution is to dissolve, by agitation, 10 parts of salicylic acid in 24 parts of officinal ammonia water, and then add enough acetic acid until a slight acid reaction is obtained. The solution has a saline taste, which is not at all unpleasant.—*Jour. f. Prakt. Chem.*, 1876, p. 286.

[If this solution is made to correspond in strength with the liquor ammonii acetatis, "U. S. P.," it should be diluted with water until it measures eight times the bulk of the officinal acetic acid employed for neutralization. Whether such a combination possesses antiseptic properties equal to those of the salicylic acid contained therein is not stated. It should, however, be borne in mind that, according to recent observations, salicylic acid combined with alkalies, appears to be by no means without medicinal effect, the carbonic acid contained in the blood being regarded as an efficient agent to liberate the salicylic acid. See also "Amer. Jour. Pharm.," 1876, p. 277.—EDITOR AMER. JOUR. PHARM.]

Estimation of the Alkaloids of Sabadilla and Physostigma.—E. Masing has found that pure *veratria*, dissolved with the requisite quantity of acid in 14,670 parts of water, yields, with Mayer's solution, a faint turbidity just recognizable, while on the addition of 1 per cent. H_2SO_4 the limit is reached with a dilution of 1 in 11,400.

The *sabadillia* double iodide dissolves in 17,630 parts of pure water, and in 19,300 parts of water containing 1 per cent. sulphuric acid.

The solubility of the hydrargyro-iodide of *sabatrina* is greater than that of the preceding alkaloids; in pure and in acidulated water, containing 1 per cent. H_2SO_4 it appears to be 1 : 2450.

Commercial veratria gives, with Mayer's solution, a larger indication of alkaloid than that employed (in one case 0·8645, instead of 0·7772 grams used); the cause for this variation, which in the presence of sabadillia and sabatrina should be smaller instead of larger, has not been ascertained. Air-dry sabadilla seeds indicated an amount of alkaloids, which, if calculated as veratria, was equal to 3·61 per cent.

Physostigmia, prepared by Vée and Leven's process ("Amer. Jour. Phar.," 1865, p. 204), ceases to react with Mayer's solution when dissolved in 9500 parts of pure water, or in 8800 parts of acidulated water, containing 1 per cent. H_2SO_4. One kilogram of Calabar beans

treated in this manner, yielded only 0·7482 grams of alkaloid, while Mayer's test solution indicated, in two experiments, 0·399 and 0·433 per cent. respectively.—*Archiv d. Phar.*, October, 310–317.

The Constituents of Tolubalsam.—By E. Busse ("Deut. Chem. Ges. Ber.," ix, 830).—Somewhat contradictory results have been arrived at by Frémy, Deville, Kopp, Scharling and Carles, partly at least due to the fact that the mode of operating was calculated in some cases to bring about decomposition of the bodies originally present. The author dissolved 1 kilo. of partly resinized tolu balsam in 2 litres of ether, filtered the liquid from a little insoluble matter, and then agitated it with 2 litres of soda-solution containing 100 grams Na_2O; after agitating the ethereal liquor again with soda, and washing with water, a residue was obtained on distilling off the ether, consisting of 85 grams of fluid neutral compounds. On fractional distillation, a little passed over below 200°, more between 250° and 300°, and most of all above 320°. The first or these fractions appeared on analysis to be impure benzylic alcohol; it formed benzoic aldehyd and acid on oxidation. The second gave a distillate at 300°, consisting of *benzyl benzoate*, $C_{14}H_{12}O_2$; on saponification it formed benzylic alcohol and a benzoate. The third portion consisted of *benzyl cinnamate*, $C_{16}H_{14}O_2$; it furnished cinnamic acid and benzylic alcohol on saponification, and had the spec. grav. 1·1145 at 16°.

Hence the neutral constituents of tolu balsam are the same as those found by Kraut in Peru balsam, only they exist in smaller quantity and different proportions, benzyl cinnamate forming the majority in the first, benzyl benzoate in the second.

The soda liquors obtained as above described were saturated with carbonic acid, whereby much resin was precipitated; the filtrate yielded a precipitate on addition of hydrochloric acid; one-half of the cinnamic acids thus thrown down was boiled with milk of lime; a sparingly soluble lime salt was thus obtained containing (after recrystallisation) 10·26 per cent. of calcium, the cinnamate requiring 10·30 per cent.: from this cinnamic acid melting at 133° was isolated. The mother-liquors of the sparingly soluble calcium cinnamate contained much calcium benzoate, which crystallized out after concentration; this gave (after several recrystallizations) numbers agreeing with the formula $Ca(C_7H_5O_2)_2+3H_2O$; and from it benzoic acid was precipitated, melting at 120·5°.

The other half of the mixture of acids was dissolved in alcohol and treated with hydrochloric acid gas; by fractional distillation the ethers thus formed were separated; the portion distilling at 215° gave numbers agreeing with the formula $C_9H_{10}O_2$, *ethyl benzoate;* that passing over at 265° agreed with $C_{11}H_{12}O_2$, *ethyl cinnamate.*

Hence tolubalsam contains free benzoic and cinnamic acids, as well as their benzylic ethers.—C. R. A. W. *in Jour. Chem. Soc.*

Analysis of Pumpkin Seeds.—Nicolai Kopylow has ascertained that these seeds contain no alkaloid, nor could the presence of a glucoside be established which, by Dorner and Wolkowitsh, was supposed to exist therein and named by them cucurbitin (1870). The last named authors had found 44·50 fixed oil, 32·75 starch and traces of volatile oil, resin, sugar and coloring matter. Kopylow ascertained the fat to consist of the glycerides of palmitic, myristic and oleic acids, and the fat extracted by ether also to contain free fatty acids.—*Phar. Zeitschr. f. Russl.*, 1876, No. 17.

Euryangium Sumbul, according to Carl Wittmann, occurs very frequently in the neighborhood of Chabarowka, on the Amoor river in Eastern Siberia, and attains a height of 1·5 metres. The fleshy branching root has at its base a diameter of 0·09 metre, and possesses a strong musk odor which is increased when the root is moistened with water. The stem is fleshy; leaves are twice or thrice pinnate, pinnæ lanceolate and sharply serrate; umbels composed of 30 to 50 rays; flowers white and small. It is called by the natives *ofuokgi* or *ouchi*: by the Chinese *zsouma-tschen-tuk*, and by the Russian inhabitants *bear's claw*, and is medicinally employed in various diseases.

Another umbelliferous plant occurs there having considerable resemblance to the former, but being somewhat smaller, the leaves lighter colored and the root destitute of musk odor.—*Ibid.*, No. 18.

A GLYCEROL OF NITRATE OF BISMUTH.

By Balmanno Squire, M.B., Lond.,

Surgeon to the British Hospital for Diseases of the Skin.

A note I contributed to the "Pharmaceutical Journal" (see "Am. Jour. Phar." 1876, p. 318) on glycerol of subacetate of lead, this summer, has been followed by the adoption of that preparation as a remedy, not only in skin diseases (particularly in chronic eczema, the

purpose for which I had designed it), but also quite as much in uterine diseases. I am encouraged, therefore, to propose now a soluble preparation of nitrate of bismuth, if such a proposition is not too absurd to be listened to.

The value of bismuth as an application in a great variety of skin diseases is well known, but its use in this direction, and indeed as I may say for every purpose for which bismuth has yet been employed as a remedy, has always been much crippled by the difficulties that have always hitherto existed in the way of obtaining a solution of bismuth.

There is of course the liquor bismuthi et ammoniæ citratis of the "Pharmacopœia," but it is a matter of doubt whether this double salt presents the properties, as a local application, of a simple salt of bismuth. It is of course merely as a local application that bismuth is employed in medicine, that is to say as a local application to the stomach in cases of painful digestion or of waterbrash, and its use in skin affections, in gonorrhœa, and so forth, is equally of the character of a topical application.

The difficulty, or rather the impossibility, of making an aqueous solution of nitrate of bismuth, otherwise than in the presence of a large excess of nitric acid (an agent which renders that solution perfectly useless for any purpose for which bismuth is serviceable), arises from two causes, the one the feeble basic properties of teroxide of bismuth, and the other the basic properties of water,—the water robbing the nitrate of bismuth of the greater portion of its nitric acid, and so precipitating nearly all of the bismuth in the form of the so-called trisnitrate.

It occurred to me, accordingly, that by the employment of glycerin as a solvent in place of water, both of these drawbacks might be circumvented, if only it should prove that nitrate of bismuth should be capable of solution in glycerin. I find that it is freely soluble in glycerin, and that it dissolves without decomposition. As I think there is likely to be a large demand for this solution, I think it necessary to communicate this fact to the pharmaceutical body through their journal. For example, I applied to one of the first pharmaceutical chemists of this city for a solution of nitrate of bismuth in glycerin, and I was told, firstly, that the salt would certainly not dissolve in glycerin, so that he could not supply me with such a solution, and in the next place he told me that the nitrate was not kept by any chemist because there was no demand for it.

Now I think that henceforth the nitrate should be kept by every chemist. I will explain why I think so. In the first place its solution in glycerin will prove without doubt the most valuable means of applying the remedy to any external surface, and in the next place it will serve equally as a means of administering bismuth internally, or if it be desired that an aqueous solution should be so administered, even that may be done. For on diluting freely the glycerol with water, the presence of glycerin, as I find, serves to delay the precipitation of the bismuth by water, so that for quite half an hour, at the least, no turbidity whatever takes place, provided the water used be cold water. It seems to me, moreover, that the presence of glycerin absolutely prevents, even after the lapse of several hours, the precipitation of more than a small proportion of the contained nitrate; insomuch that I have reason to believe that a merely moderate dilution of the glycerol might leave a permanently clear solution, but I have not as yet made quantitative experiments on this head.

We accordingly have henceforward at our command a preparation which has for long been a desideratum, and one the contrivance of which has baffled the efforts of the compilers of our "Pharmacopœia," and indeed the efforts of every one who has devoted attention to the point.

I was assured on all hands that if I ever should succeed in getting by any means a solution of nitrate of bismuth, I should find that I had before me a very irritating application instead of what I desired, that is to say, a bland astringent. But I have sucked my glycerol; I have even rubbed it into my tongue, and I find it to be merely what I had designed it to be, and that is a bland and mild astringent. It is obvious that a soluble preparation of a drug is a much more efficient and certain mode of employing it than an insoluble one, and that a simpler preparation of the article is likely to prove a more active and serviceable mode of administering it than any more complicated preparation of it. I accordingly lay the results of my investigation before the pharmaceutical body in the confidence that they will soon develop its capabilities in a very considerable degree.

As an application to the throat, the larynx, the vagina, the uterus and the urethra, as well as to the skin, and no less as an internal remedy, I believe the preparation of glycerol of nitrate of bismuth will be found to open out a new field of therapeutics.

Since writing the above, I find the glycerol of nitrate of bismuth to be a somewhat more stimulant application, in cases of eczema, than a glycerol of the subacetate of lead of corresponding strength.

On the other hand, I find by sucking the actual crystals of the nitrate of bismuth, that the salt is in no degree a caustic, and not more acid to the taste than crystals of citric acid.—*Phar. Jour and Trans.*, Nov. 11, 1876.

SOLVENTS OF SALICYLIC ACID.

By J. C. Thresh, Pharmaceutical Chemist.

To increase the facility with which salicylic acid may be administered, various substances have been proposed, which increase in a remarkable manner the solvent action of water upon it. The salts usually employed for this purpose are borax, phosphate of soda and citrate of ammonia, and my experiments were undertaken to ascertain whether or not this increased solubility was due to some chemical decomposition between the acid and the salts employed, and if the solutions thus formed possessed the antiseptic and antifermentative properties of the free acid.

Borax.—This salt is remarkable for its solvent action upon a large number of organic compounds, the nature of which action is not, in most cases, yet ascertained. If borax and salicylic acid be mixed in a mortar, the result is a damp almost pasty mass. The taste at first is simply that of the acid and borax, but in a very short time it begins to acquire a bitter taste, and after a few hours it will be found to be intensely bitter. If a little of the freshly prepared mixture be carefully fused the resulting mass at once becomes exceedingly bitter, and if the proportions employed were one of borax to two of acid, the mass is soluble in about twice its weight of water. A dilute solution of five gr. each of acid and borax in one ounce of water is devoid of bitterness, and remains so even after keeping a length of time, but stronger solutions soon become bitter. I have failed as yet to ascertain the nature of this reaction, or to isolate the bitter product, unless a crystalline deposit, which is slowly forming in a solution of 2·5 borax, 4 acid and 50 water, which is evaporating spontaneously, proves to be the substance in question.

Phosphate of Soda.—This salt has not a solvent effect equal to

that of either borax or ammonium citrate. One part of salicylic acid requires

2 parts of phosphate	to form	a solution	with	50 parts	water.
2·25	"	"	"	25	"
2·5[1]	"	"	"	12·5	"

Solutions 1 and 2 are colorless, but the strongest solution has a slight pink tint (characteristic of salicylic salts). Diluted with water, ferric chloride added in excess gives a purple red solution, which also indicates the existence of a salicylic salt, since whilst free salicylic acid strikes a purple color with ferric chloride, its salts give a deep-red coloration with this reagent. No phosphoric acid, however, is liberated, for a single drop of the dilute acid added to the solution causes a precipitation of salicylic acid.

Ammonium Citrate.—I first ascertained, by experiment, that this citrate, whilst increasing the solubility of salicylic acid in water to a much greater extent than sodium citrate, yet possesses no advantages over potassium citrate, and as this latter was more convenient for my purpose, I have employed it in preference.

Table of solubility of salicylic acid in potassium citrate solution :

Salicylic Acid	1	Citrate	·75	Water	100
"	1	"	1·0	"	50
"	1	"	1·15	"	25
"	1	"	1·25	"	20
"	1	"	1·4	"	12·5
"	1	"	1·5	"	7·5

A stronger solution than the last solidfies upon cooling, but the nature of the mass I have not yet ascertained. It gives reactions indicative of free and combined salicylic acid and of combined citric acid, but not of free citric acid. An alcoholic solution of potassium salicylate, mixed with a similar solution of citric acid, gives a precipitate of potassium citrate, which readily dissolves on the addition of a little water, and the solution thus formed is miscible with water, without precipitation of salicylic acid. 1 dram Acid. Salicylic, $3\frac{1}{2}$ drams. Sp. Vin. Rect., 1 dram. Pot. Cit. and $3\frac{1}{2}$ drams. Water, form a solution miscible with water in all proportions, and 2 drams of which contain 15 grains of the acid. In this solution diluted acetic acid gives no precipitate, citric acid causes a precipitate to form slowly, mineral acids throw down the salicylic acid instantly; ferric chloride colors the fluid purple-red.

[1] Three drams would contain a full dose (fifteen grains nearly) of salicylic acid.

To ascertain the antiseptic value of the solutions formed by aid of these salts, I added them to a number of infusions (malt, quassia, calumba, etc.), to grape-juice and flour-paste, and so far as I can tell after the lapse of two months, with the exception of flour-paste and grape-juice, the solutions are equally as fresh as those prepared with free salicylic acid.

To test their antifermentative powers, I prepared over thirty mixtures of flour (1 oz.) and water ($\frac{1}{2}$ oz.) with 20 grains of German yeast in each, and added thereto various proportions of free salicylic acid, of potassium salicylate acidified with acetic acid and of salicylic acid dissolved by aid of borax, phosphate of soda and citrate of potash, and in the cases where no fermentation ensued, I confirmed the result by repetitions of the experiments.

The smallest quantity of free salicylic acid, which uniformly prevented the rising of the dough, was 1 grain. The acidified salicylate of potash had not the slightest effect unless added in large proportions. 1 grain of acid in borax solution was equally as powerful as the free acid. A similar quantity dissolved by aid of ammonia citrate or sodium phosphate only retarded for a variable time the fermentation, but in both cases $1\frac{1}{4}$ gr. was found effectually to arrest it.

It is, therefore, evident that some reaction as yet undetermined does take place between the salicylic acid and the salts employed as its solvents, yet that, in whatever state the salicylic acid exists in the above named solutions, it is capable of exhibiting in a high degree all those properties which have conferred upon it such notoriety.—*Phar. Jour. and Trans.*, November 25th, 1876.

PROCESS FOR MANUFACTURING "CINCHONA FEBRIFUGE" AT SIKKIM.

By C. H. Wood, Government Quinologist.

The present method of treating cinchona bark was adopted as a temporary measure to afford the means of ascertaining the medicinal value of the proposed febrifuge. It was considered undesirable to incur any large expenditure for factory buildings, machinery or skilled labor, until the efficacy of the product as a remedial agent had been thoroughly determined by extensive trials. Consequently, it was necessary to so arrange the process that it could be conducted for some time on a considerable scale, and involve no other appliances than such as

were already at hand. The dry bark is crushed into small pieces, but not powdered, and is put into wooden casks, where it is macerated in the cold with very dilute hydrochloric acid. The liquor is then run off into wooden vessels, and mixed with an excess of a strong solution of caustic soda. A precipitate forms, which is collected on calico filters, and well washed with water. The precipitate is then dried at a gentle heat, and powdered. It constitutes the crude febrifuge, which is next submitted to a process of purification. In the latter process a certain weight of the crude product is dissolved in dilute sulphuric acid, and a small quantity of a solution of sulphur in caustic soda is added to the liquor. After the lapse of twenty-four hours the liquor is carefully filtered. The filtrate is mixed with caustic soda, and the resulting precipitate collected on calico, washed with a small quantity of water, dried and powdered. It is then ready for issue, and is sent out under the name of "Cinchona Febrifuge." A position for the factory sheds was chosen conveniently near the dry bark go-downs, and so situated on the side of the hill that a copious supply of water could be obtained at a level with the roof of the sheds in which the maceration is conducted. These sheds are rough, temporary erections, constructed with saplings and a mat or thatch roof. Down the centre an open drain is cut to carry off the waste liquor. Over this drain some wooden stands are placed, on which the calico filters rest. The filters are formed by tying a square piece of calico to a wooden frame by the four corners. On each side of the shed is placed a row of twenty-one casks, standing on end upon a stand which elevates them about two feet from the ground. They are empty beer barrels, which have been purchased from the Commissariat Department at Darjeeling, the head removed, and the cask thoroughly cleansed. A hole is cut in the side of the cask at a level with the bottom, and closed with a cork. In front of the casks a row of tubs, formed by cutting beer barrels in halves, is placed, so that on uncorking the barrels the liquor will run out into the tubs. Outside the shed, at one end, are a couple of large wooden vats, at such an elevation that liquid can flow from them along a bamboo trough into any one of the barrels in the shed. The capacity of the vats, up to a mark on the inside near the top, is accurately determined. Water is run into the vat up to the mark, and a certain quantity of muriatic acid is added, and the whole well mixed. This diluted acid can then be run into any one of the casks in a line with

the vat, by means of a bamboo trough. In addition to the macerating sheds, there is a small brick building, heated with charcoal, in which the precipitate is dried; also a separate shed, in which the process of purification is conducted. The casks are worked in sets of three, and are marked A, B, C. In each shed there are fourteen sets, seven on each side. Each cask receives one maund of dry bark, which undergoes four successive macerations, the liquor being moved in rotation through the three casks. Each maceration lasts half a week. The liquid used for the fourth and last maceration is acidulated water drawn from the vat. When this is run off, it is moved into the next cask to form the third liquor. When this is drawn off, it forms the second liquor for another cask, and when transferred from that, it goes on to new bark, from which it is drawn off and precipitated. Of course, in starting a new shed every cask contains dry bark, consequently the system of rotation is not brought into full operation until after the first fortnight, and it is only after the shed has been in operation for three and a half weeks that the liquor for precipitation has been used for four macerations. The liquor that is for precipitation is run into the tubs. The other liquors are drawn into wooden buckets and poured into the proper casks. The new acid is then drawn from the vats. The diluted acid is made in the vat by adding one gallon of muriatic acid to every hundred gallons of water—ten fluidounces to each cubic foot. If three sheds are emyloyed, No. 1 is worked on Mondays and Thursdays, No. 2 on Tuesdays and Fridays, and No. 3 on Wednesdays and Saturdays. Each set of three casks exhausts one maund of dry bark per week. Three sheds, therefore, containing forty-two casks each, would exhaust forty-two maunds of bark every week. The weight of acid used in the exhaustion is six and a half per cent. of the weight of dry bark. It is obtained from Mr. Waldie's chemical works at a cost of three and a half annas per pound in Calcutta. To precipitate the saturated liquor, a solution of caustic soda is added in excess. The caustic soda is obtained from England in five-cwt. drums, costing from £15 to £20 per ton in London. One part of this is dissolved in three parts of water, and the solution stored in iron vessels. The quantity to be added to the bark liquor must be judged of by the appearance produced. When a sufficient quantity has been introduced the precipitate assumes a somewhat curdy condition.

About six and a half pounds of solid soda are used for every hundred

pounds of dry bark. The filtration is not commenced until the following day, when the liquor is transferred to the calico strainers, which have been well wetted. The first portions that run through are returned, until the liquid passes of a bright ruby color; it is then allowed to flow away by the drain. After all the liquor has drained off, water is passed through the precipitate until it ceases to acquire a red tint. The alkaloids on the filter should then be of a uniform cream color. The precipitate is now dried and reduced to a fine powder, which is stored in suitable bins. It constitutes the crude febrifuge. The precipitate, during the act of drying, acquires a slightly reddish-brown color. It is, therefore, submitted to a process of purification. Fourteen gallons of water are mixed with two pints of sulphuric acid, and twenty pounds of the dry powder are introduced. The alkaloids dissolve, and a quantity of coloring matter remains insoluble. About half a pint of a solution of sulphur in caustic soda is now stirred in, and the whole allowed to stand for twenty-four hours. It is then filtered through calico into a clean vessel, care being taken to get the liquor perfectly bright. About six gallons of water are used to wash the sediment left on the filters. The clear filtrate is thoroughly mixed with solution of soda to precipitate the alkaloid. The precipitate is collected on calico, washed with a small quantity of water, drained, dried and reduced to fine powder. It is then ready for issue. Wooden tubs are used for this process, but they are not so well suited for the purpose as enameled iron or earthernware. The purification is conducted in a separate shed by a man who is confined to that work. The only workmen employed in the factory are Nepalese coolies. When the process is once brought into full operation, it is found that these men readily master every detail, and conduct the whole thing with all the care and accuracy that is required. But, of course, the factory is under the supervision of Mr. Gammie, the officer in charge of the plantations, who visits it once a day and sees that the work is being properly performed. Dry *succirubra* bark only is employed. Moreover, care is taken to mix the root, stem and branch bark together in as nearly as possible the proportions in which they are yielded by the plantations.

This mixture is broken into small pieces, and a maund of it goes into each cask. This is done to insure uniformity of composition in the product. Green bark is never operated on. It will be seen that the

arrangement of the process requires that a certain weight of bark should be put into the casks every week throughout the year. This could not be done with green bark, because bark is only taken from the trees twice per annum. Apart from this, however, it has been found that dry bark yields a much better product, and quite as large a quantity. The small cost of drying the bark is more than counterbalanced by the advantages gained. It must be remembered that this method has only been adopted to furnish a large supply of febrifuge for trial. It does not profess to make the most economical use possible of the bark. The factory is estimated to turn out during the present financial year four thousand eight hundred pounds of febrifuge, which at a rupee (2*s.*) an ounce, will pay the whole cost of the plantations and manufacture for the year. If the product proves to be of permanent value as a remedial agent, it is probable that the process will be considerably modified to produce greater economy, but involving the use of permanent buildings and machinery.—*Jour. App. Sci.* [Lond], December 1st, 1876.

ERYTHROPHLŒUM GUINEENSE, and E. COUMINGA.

By N. Gallois and E. Hardy.

The *Erythrophlœum guineense* is a tall tree belonging to the family *Leguminosæ*, and growing along the west coast of Africa. Its wood is very hard, and is covered with a hard fibrous and odorless bark, which contains an active poison, and to which the name of *erythrophleina* has been given. Erythrophleina is a base and may be obtained by extracting the pulverised bark with alcohol, evaporating the tincture to a small bulk, treating this with warm water, evaporating the aqueous extract at a low temperature, rendering it alkaline with ammonia, or sodium carbonate, and extracting with acetic ether. On evaporating the resulting solution the base is left. It is only slightly soluble in ordinary ether, in benzol or in chloroform, but dissolves in water, acetic ether, amylic alcohol, and ordinary alcohol. It forms salts with acids, and its chloride is precipitated by platinic chloride, forming a double salt. The following reactions have been noted with solutions of erythrophleina :—

Picric acid : yellow-green precipitate.

Iodine, in potassium iodide : reddish-yellow precipitate.

Iodide of mercury and potassium : white precipitate.

Iodide of bismuth and cadmium : flocculent white precipitate.

Potassium bichromate: yellowish precipitate.

Mercuric chloride: white precipitate.

Auric chloride: whitish precipitate.

Palladic chloride: white precipitate.

In contact with manganese peroxide and sulphuric acid, it develops a violet color (less intense than that produced under similar circumstances by trychnia), which soon changes to a dirty-brown.

Erythrophleina possesses very marked toxic properties, and must be placed amongst those poisons which act upon the heart.

Two milligrams injected under the skin of a frog's foot caused the cessation of the heart's action in five to eight minutes. The ventricles cease in systole, the auricles generally in diastole. The cessation of the cardiac muscle is succeeded by a torpor of all the muscles, during which death occurs. The double salt with platinic chloride produces the same effect as the base itself.

Atropia does not rally the action of the heart paralyzed by erythrophleina, but curare delays the effects.

E. Couminga is a variety resembling *E. guineense*. All parts of it are poisonous, and the poison consists of an alkaloid, of which the physiological effects are similar to those of erythrophleina.—C. H. P. *in Jour. Chem. Soc.*, Nov., 1876, from *Bull. Soc. Chim.* [2], ccxxi, 39-40.

VARIETIES.

Student Life in Germany. By Frederick B. Power.—The thought occurred to the writer that a glimpse of student life in Germany might not be entirely devoid of interest to some American students or Pharmacists, and more especially in relation to those studies pursued by Pharmacists in the departments of science of the German Universities.

The German University, as is generally known, is wider in its scope than many American Colleges and Universities, and adopts a method of instruction diverging considerably from the more general collegiate curriculum; it also finds such earnest recognition from the fact of its liberality, the student not being compelled to gain his information from prescribed text books, or to follow a contracted and mechanical course of study, but such studies as he may wish to pursue may be selected by him at his option. The University year is divided into two semesters of about five months each, the winter semester beginning the latter part of October and ending the latter part of March; the summer semester beginning about the middle of April and ending about the middle of August, a short vacation being allowed at the Easter season and a vacation of two months during the summer.

The Faculties as a rule embrace Theology, Law and Political Science, Philosophy, Medicine, Mathematics and the Natural Sciences. In the latter department may be found almost exclusively those branches of special interest to the Pharmacist and Chemist, with the exception of a few of indirect importance, which are included in the Faculty of Medicine and treated more in relation to the requirements of medical science, such as Toxicology, Pharmacology, Physiological and Pathological Chemistry.

The Mathematical and Natural Science Faculty embraces theoretical and practical Chemistry, Pharmacognosy, Botany, Mineralogy, Physics, Geology, Zoology, Palæophytology, Palæontology and the higher branches of Mathematics.

From this somewhat extended list such may be selected as may meet the requirements of individual purposes and needs, and it not unfrequently occurs that the students change from one University to another, to study in some special department where the Professor, through original investigation and research in the field of discovery, has acquired greater celebrity.

The *Vorlesungen*, readings or lectures by the Professors, take place at different hours of the day, and are so arranged in the respective faculties that the attendance of one may not preclude the attendance of another, beginning at 8 or 9 in the morning, are followed by other Professors at intervals throughout the day until 6 or 8 in the evening; the time intervening between lecture hours being employed by the students in Laboratory work.

The Laboratories, although differing in size and elegance of appointments, according to the wealth and position maintained by the respective Universities, are generally well supplied with all the conveniences and accessories for the execution of practical work and investigation in the several domains of science.

The Libraries which form a vast storehouse of knowledge, as also the reading rooms, where may be found all the current scientific literature, are also accessible to the students upon the payment of a small sum.

The students are comprised not only of those who still retain a vivid recollection of the ordeal of a German *Gymnasium* examination, but also of many upon whom the hand of time has made its impress. They are also, as a class, not possessed of unlimited means, and are therefore necessarily confined to the plainer modes of life. Their quarters are often to be found in the fifth story, at which elevation the rooms are the cheapest, and from which a song has originated entitled, *Fünf Treppen hoch.* The furniture of these rooms may consist of a writing table, chair, student lamp, and perhaps adorning the wall one or more capacious pipes.

Upon entering the University buildings, may be observed a black-board, where official and other announcements of general information to the students are from time to time made known, such as changes in the hours appointed for lectures, etc. There also may usually be seen a placard announcing the location of the *Fechtboden*, or fencing room, and where fencing implements may be obtained. This feature, which has become an almost historical characteristic of the German University, is happily on the decline, being with a few exceptions less frequently indulged in than in former years, although students may still be seen who carry the scars caused by the deep gashes of the sabre, and which are often considered as

emblematical of high honor, from the resentment of some often imaginary injury or feeling of wounded pride.

There being no class recitations as in many American Colleges and Universities, the Professors are much less restricted, and able to devote much more time to independent study; the developments of which are soon communicated to the students. As might be expected from their position, the Professors are usually indefatigable workers and searchers after truth in the explorations of their favorite and special departments of science; and it is indeed only upon this basis that they meet with official recognition by the Government or the University. That the German Universities, as a class, are extended in their scope and high in their standard and aim is a fact which has long since met with universal recognition, and is verified by their attendance by students from almost every part of the civilized world; in the words of Heinrich von Seybel (a leading Professor at Bonn), "they are workshops of science and not mere institutions where instruction is given." They offer to the student a wide field for independent thought and development, and as it has been stated that they were in their prime in the time of Gœthe, it certainly cannot be intimated that they have since declined, as the Prussian Government, fully realizing their importance, has extended to them every required support. That the German scientists have in the past and do still, through their labors, render inestimable service for the advancement of Pharmacy and allied sciences, is a fact so patent as to admit of no refutation, and one need but to look over the scientific literature of the past, and the unreceding current of the present, as distributed through the various journalistic exponents, to be assured of and appreciate its vast importance; and although it has been sometimes stated that the German scientific literature is imprabticable and abstruse, it should be remembered that the divulgement of theoretical speculations often illumine the way which may lead to practical results, and their subsequent useful application in Medicine, Manufactures and the Arts, a most striking example of which may be observed in the history of the development of the coal tar colors and other artificial dyes, the results of much patient study and research, performed chiefly for the purpose of elucidating some scientific theories, with little preconception of the important part they were destined to play in the world's industry.

At the more important Universities there exists the *Akademische Pharmaceuten-Verein*, an organization of pharmaceutical and chemical students, for social intercourse and the discussion of scientific subjects, and which is inaugurated each year by a so-called *Antritts-Kneipe*, upon which occasion new members are accepted, the popular student songs are sung, short speeches made, and many other festivities peculiar to the time-honored customs of German students, and which indeed form an integral part of student life.

It is, however, an unfortunate fact that the number of pharmaceutical students throughout Germany has so perceptibly decreased within the past few years, although the number of votaries to strictly chemical science gradually increases; but this is hardly surprising in view of the fact of the prevailing tendencies in the direction of *free trade*, and the long preparatory course required by law, extending through a period of about 8 years, before a candidate can purchase an established Pharmacy or obtain a concession from the Government for the erection of a new one in such

a locality as may be considered necessary. With the future of Pharmacy in Germany thus clouded, it is quite natural that its would-be devotees seek more lucrative and promising fields of labor.

However, while students of Philosophy, Medicine and Political Science are year after year migrating to German shores, it would be highly gratifying to see some representatives among the American Pharmacists, and while not detracting from the support due to home educational institutions or the high position attained by some American Colleges of Pharmacy, through the faithful teaching and untiring industry of their Professors, the student is thus but the better prepared, and possesses but the needed qualifications for the further pursuit of such studies, and the more closely allied collateral sciences, thus giving a stimulus to a spirit of advancement and research which, it might be hoped, in connection with the Colleges of Pharmacy and various local organizations, would be productive of a still higher status of American Pharmacy, when the empiricism shall be exposed and suppressed, and yield to the requirements of true science; when the Pharmacist shall no longer be looked upon as a mere tradesman or the acceptance of the vocation simply as a means toward the attainment of selfish ends, but that it may meet with its proper recognition by the people, as standing on a level with the professions of Medicine or of Law, and having a just claim on their protection, and although in its nature in a degree subservient to the demands of Medicine, so also is Medicine indebted to and dependent upon Pharmacy and Chemistry for many of the remedies daily employed. The often assumed position of antagonism between members of the two professions as to the right of prerogative or claim of superiority from the standpoint of social position and influence on the part of either, cannot be otherwise than detrimental to the highest interests of both, and the too frequently manifested spirit of animosity should be supplanted by the dictates of truer reason.

In conclusion, the writer would call the attention of those who may feel interested upon the subject of German Universities in their various relations to the work of Jas. Morgan Hart, entitled "German Universities," as also a series of highly interesting articles by the same author, in "Lippincott's Magazine," vol. xvii, and would also further extend the assurance that American students who cross the seas in the pursuit of knowledge, will ever meet with a welcome reception at the hands of their German co-workers.

Strassburg, November, 1876.

Castile Soap and its Counterfeits.—There are four descriptions of imported Castile soap known in the American market First, and at the head of the list in reputation is the Italian white Castile, known as the Conti soap. The jobbing price of this at present ranges from sixteen to sixteen and a half cents currency. It is claimed that oil only is used instead of fat in its manufacture, either olive oil that is left after the best is bottled, or sometimes cocoa-nut oil. The next brand in reputation, and said to be equal in quality and healing properties, is the "white horse," also a white soap, imported from Marseilles. This at present is selling at twelve to twelve and a half cents. These two brands, it is said, are never counterfeited here, and are stated to be free from all adulteration. Tests made by us have failed to show any adulteration or addition of substances to add to the weight, as is the case in mottled soaps. These white soaps come in boxes of thirty-five to thirty-seven pounds gross weight, and a tare of four pounds is allowed. Next come the Marseilles and the Leghorn mottled, the former claimed to be the better of the two. The importation of these soaps is rapidly falling off, owing to the competition of the domestic article, which as a rule is asserted to be the best and purest. In mak-

ing the Castile soap olive or cocoa-nut oil is supposed to be the material used, and this gives it its healing properties. Of late years, however, other and cheaper oils are said to have been substituted, such as linseed and cotton seed oil, but the fact of the latter being used can be detected, it is claimed by experts, from the darker color of the soap. Within the past five years, in order to meet the competition of buyers, it has become the custom to adulterate both Marseilles and Leghorn mottled soap with terra alba or chalk Some samples which we have seen tested show thirty-five per cent. of this substance added to increase the weight and cheapen the article. There is, of course, some of the genuine article imported, but a buyer had better depend on the reputation of his wholesale dealers, and even then they may possibly be imposed upon. These soaps come in boxes of forty-five to forty-seven pounds, and a tare of eight pounds is allowed. The loss in weight on Castile soap is very large, according to the length of time it is carried, the loss in four or five months being as much in some cases as twenty per cent. When sold it is re-weighed, and by some dealers the actual tare at the time of sale is allowed, and by some the original tare, but the price is advanced accordingly, the price having to be made so much higher to meet the loss in weight. This mottled soap is also largely made here. Boxes are shipped here from Marseilles in the form of shooks and put together here. These boxes, when put in the market, often bear all the marks of imported soap. The soft and wet appearance of the soap is no guide as to whether it is foreign or domestic, as the former often reaches here in that state, and soap containing a large proportion of water to increase the weight, but it should be made in bars, and not look as if cut with a wire.—*Jour. App. Sci.*, [Lond.], Dec. 1, 1876, from *American Grocer.*

The Manufacture of Milk Sugar in Switzerland.—By A. Sauter —In a communication to the "Schweizerische Wochenschrift für Pharmacie," for the 20th of October, the author gives an account of a visit to Marbach, in the canton of Luzerne, Switzerland, where half a dozen refiners are said to make a handsome income from the manufacture of milk sugar.

The raw material used for the recrystallization comes from the neighboring Alps, in the cantons of Luzerne, Bern, Schwyz, etc.; a considerable quantity is supplied also by Gruyères. It is the so-called "Schottensand," or "Zuckersand," the French "Déchet de lait," obtained by simple evaporation of the whey after cheese-making. Notwithstanding a continual rise in the price, consequent upon the demand and the increased cost of labor and fuel, the manufacture continually expands, and now amounts to 1,800 to 2,000 cwts. yearly, corresponding to a gross value of about 300,000 francs—certainly a handsome sum for a small mountain village, with but few inhabitants.

The manufacture is only carried on in the higher mountains, because there the material can no longer be used profitably for the fattening of swine, which are found chiefly in the valleys, and the wood required for the evaporating process is cheaper in the highlands.

The crude material is sent to the manufacturer or refiner in sacks containing one to two hundredweights. It is washed in copper vessels, and dissolved to saturation at the boiling temperature over a fire, and the yellow brown liquor, after straining, is allowed to stand in copper-lined tubs or long troughs to crystallize. The sugar crystals form in clusters on immersed chips of wood, and these are the most pure, and therefore of rather greater commercial value than the milk sugar in plates, which is deposited on the sides of the vessels.

In ten to fourteen days the process of crystallization has ended, and the milk sugar has finished growing (*ausgewachsen*). The crystals are then washed with cold water, afterwards dried in a cauldron over a fire, and packed in casks holding four to five hundredweights.

As the "Schottensand" can only be obtained in the summer, the recrystallization is not carried on in the winter, hence a popular saying that the milk sugar does not "grow" in the winter. The entire manipulation is carried on in a very primi-

tive manner, it being a matter of astonishment to find a specific gravity instrument in any place. The author is of opinion that with a more rational method of working, a whiter and finer quality sugar could be produced.—*Pharm. Journ. and Trans.*, Nov. 11th, 1876.

Ipecacuanha and Vanilla Cultivation in India.—The following notes on the cultivation of vanilla and ipecacuanha in India we gather from Dr. King's recently received report on the Calcutta Botanic Gardens. With reference to the former, Dr. King says: "Some very sanguine forecasts having been made of the future of vanilla cultivation in Bengal, a number of plants were, two years ago, put out in the Calcutta Garden under sheds similar to those in which the pepper vine is grown. The growth of these plants has not been satisfactory, probably from over-shading; many have, therefore, been recently put under the shade of mango-trees. The finest old vanilla plants in the Garden grow against a north wall. One of these was this year laden with pods, but an unusually high temperature for a day or two caused them to drop prematurely. Recent, as well as former experience, leads me to think that vanilla will never become a staple product in Bengal." With regard to ipecacuanha, quantities of plants, it seems, "have been sent to Ceylon, to the Neilgherries (for trial at Barliar, a garden in a hot, low valley below Coonoor) and to Burmah. It is to be hoped that a locality may soon be found where this invaluable specific, for one of the worst of tropical diseases, can be profitably grown as a crop. I fear it cannot be thus grown so far north as Bengal. The secret of successful propagation being now perfectly understood, any number of plants can be sent out. During the year I supplied a quantity of the drug itself (the dried root) to the Surgeon-General for trial in hospital practice. This was carefully administered in cases of dysentery by Dr. Crombie, late officiating physician to the Medical College Hospital, and was pronounced by him to be quite as efficient as the best South American drug.—*Pharm. Journ. and Trans.*, Nov. 25th, 1876.

Almén's Test for Blood.—T. Schiellerup (Copenhagen) calls attention to the so-called Almén's test, and warns against its use as being TOO DELICATE—one twenty-thousandth part of a milligram of iron (as chloride) being sufficient to produce the reaction. The test is as follows: A few cubic centimetres of tincture of guaiacum and an equal quantity of oil of turpentine are put into a test-tube and a little of the suspected liquid (urine, etc.) added, when, in the presence of blood, an intense blue color is immediately produced; dried stains are extracted with diluted acetic acid (Proceedings Amer. Phar. Asso., 1875, p. 465) If one considers that iron is almost universally found, and that the reaction, as before mentioned, is so extremely delicate, it becomes evident that this test is a dangerous one in legal cases.

Mr. S. remarks incidentally that this test originated some fifteen years ago with Prof. Van Deen, Holland.—H. M. W. from *Ny Pharm. Tidskrift*, 1876, p. 353.

MINUTES OF THE COLLEGE.

PHILADELPHIA, Twelfth mo. 25th, 1876.

Pursuant to the usual notice, the following members of the Philadelphia College of Pharmacy assembled at the College hall, No. 145 N. Tenth street, viz.:

Dillwyn Parrish, President; William C. Bakes and William J. Jenks.

There being no quorum in attendance, it was agreed to adjourn to meet to morrow, the 26th inst., at 3.30 P.M.

WILLIAM J. JENKS, *Secretary.*

PHILADELPHIA, Twelfth mo. 26th, 1876.

An adjourned meeting of the Philadelphia College of Pharmacy was held this day at the College hall, No. 145 N. Tenth street. Dillwyn Parrish, President, in the chair, and twelve members in attendance.

The minutes of the last meeting were read and adopted Those of the Board of Trustees were also read, and on motion adopted.

The Secretary reported that the resolution of thanks, directed by the College last month to be sent to Messrs. F. C. Calvert & Co., of Manchester, England, had been engrossed and forwarded to them as requested.

Mr. Bullock, Treasurer of the Committee on Centennial Purchases, reported through Mr. Wiegand that he would have remaining a small sum of money, and requested the College to direct the amount to be returned to the Treasurer of the College, which request was acquiesced in and the motion agreed to.

Mr. McIntyre, Registrar of the Pharmaceutical Meetings, stated that he had sent out notices and invitations to others interested in pharmaceutical science beside the members of the College, to attend such meetings, and desired to know if his course was approved.

It being the general opinion that it was desirable to have a full attendance of all who might take an interest in pharmacy it was, on motion,

Resolved, That we recognize the invitations sent out by the Registrar as being strictly within the intention of the College in instituting the Pharmaceutical Meetings.

Mr. Boring stated that the meetings of the Alumni Association had been generally held in the College, and desired to know if the continuance of this practice was acceptable to members, which, meeting with an affirmative response, it was, on motion,

Resolved, That the Alumni Association of the College be invited to hold such meetings as they may desire in the College building.

Professor Remington presented an original portrait in oil of the late William Redwood Fisher, Professor of Chemistry in this College in 1841–42. This portrait was given to the College by Mrs. William J. Geen of this city, through the interposition of Professor Joseph Carson, who was Professor of Materia Medica in the College at the same time.

The portrait is a valuable one, and completes the line of pictures of the Professors from the foundation of the College to the present time.

On motion of Mr. Bakes, the Hall Committee were directed to have the portrait framed in accordance with the others, and hung in its place in the Hall of the College.

On motion of Professor Remington the thanks of the College were directed to be presented to Mrs. Geen for the acceptable gift, and also to Professor Joseph Carson for the interest he has taken in the College in connection therewith.

There being no further business, on motion, adjourned.

WILLIAM J. JENKS, *Secretary*.

MINUTES OF THE PHARMACEUTICAL MEETING.

The third meeting of the session was held December 19th, 1876, Dillwyn Parrish in the chair. The minutes of the previous meeting were read and approved. Donations to the library: "The Chemists' and Druggists' Diary," 1877, London, from the publishers; the "Greek Pharmacopœia," from Prof. X. Landerer, of Athens; to the Cabinet: Maté or Paraguay tea, in original packages, from Alonzo Robbins.

R. V. Mattison read a paper on Diluted Phosphoric Acid (see page 8), claiming for his process rapidity and safety in execution, no special apparatus being required, and it being not expensive in a small way.

Dr. Pile thought the process, with bromine in solution, all that could be desired in simplicity, requiring no watching, but merely some time; the troublesome part with both processes is the evaporation of the nitric acid. For this a low temperature will not suffice, a heat of 340° to 350° F. being required, and afterwards care not to dilute until cold. A much higher temperature will dissolve the enamel of the Berlin capsules, which will be partly precipitated upon the addition of water. Prof. Maisch remarked that the determination of neutralization by means of litmus was very unsatisfactory, since the litmus solution changed its color very gradually.

Prof. Maisch read a paper by L. Wolff, of Philadelphia, on the use of Petroleum Benzin in Pharmacy (see page 1). He regarded this as a very interesting subject, and one which was by no means exhausted. Some time since ("Am. Jour. Ph.," 1872, p. 134), he had presented to this meeting styracin made of the use of petroleum benzin, and other observers had born testimony to its manifold uses. Wm. L. Harrison ("Am. Jour. Phar.," 1874, p. 161), found in it an easy and cheap way of obtaining cinnamic acid, besides styracin, and Wallace Procter had separated with it a white crystalline substance from Magnolia tripetela (*Ibid.*, 1872, p. 146). It is an excellent solvent for monobromated camphor and other crystalline bodies, and affords a ready means of obtaining them in good crystallizations.

Prof. Remington said that an odor of kerosene might remain in such preparations from the employment of a petroleum benzin which had not been carefully rectified.

Dr. Pile, in preparing some oleoresins, had used the kind known as gasolin, and did not find any odor remaining.

Prof. Maisch exhibited quinine flower, so-called ("Am. Jour. Ph.," 1876, p. 454); from experiments made by Mr. Th. F. Beckert, it is possible that it may contain an alkaloid; if so, it would be the first found in the Gentianaceæ. Mr. Beckert observed that the tincture evaporated, thrown into water slightly acidulated and filtered, would yield a slight precipitate with Mayer's solution.

Dr. J. Dabney Palmer, of Monticello, Fla., had sent the quinine flower and its tincture; also tincture and fluid extract of Buttonwood (Cephalanthus occidentalis) and tincture of Sarracenia flava or Trumpet plant, which appear to be employed medicinally in that section of the country.

Prof. Remington had upon the table for inspection from the Centennial Exhibition an interesting collection; from A. Beslier, Paris, Pharmaceutical preparations and a large mounted specimen of Thapsia Garganica; from Joseph Bosisto, Victoria, Eucalyptus products and Australian pharmaceutical preparations; from Mr. Brugsch, Egyptian Commissioner, Egyptian Drugs, Pharmaceutical preparations, etc.; purchased by the College from Behn Meyer & Co., of Singapore, a large collection of raw products of that region. A detailed account of these acquisitions will appear in the Curator's report, to be read at the annual meeting of the College.

William McIntyre, Registrar.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The Richmond Pharmaceutical Association held its annual meeting on the evening of December 12th, Dr. John R. Garnett in the chair, Mr. Jos. N. Willis, Secretary. Mr. Hugh Blair reported on the operations of the Society during the past year, and made some valuable suggestions relating to its future welfare and usefulness. Reports were also received from the Recording Secretary, Mr. Jos. Anthony, and the treasurer, Mr. B. C. Lewis.

The election of officers for the ensuing year resulted as follows: President, Hugh Blair; First Vice-President, Joseph N. Willis; Second Vice-President, P E. Dupuy; Recording Secretary, Joseph Anthony; Corresponding Secretary, T. Roberts Baker. Executive Committee: Wm. P. Poythress, Polk Miller, Jesse Child.

The Camden County Pharmaceutical Association held its third annual meeting Nov. 24th, President Jas. A. Armstrong in the chair.

Reports from the Secretary and Treasurer showed the Society to be in a flattering condition.

The President's annual address contained a short history of all the pharmaceutical stores in Camden, which was very interesting.

The following officers were elected for the ensuing year: President, D. P. Pancoast, M. D. Vice-President, M. Goldsmith. Secretary, Emmor H. Lee, Ph. G. Treasurer, L. M. Pratt, M. D. Librarian, O. G. Taylor. Library Committee—S. W. Cochran, F. G. Thoman, Herman W. Miller.

Alumni Association of the Philadelphia College of Pharmacy.—At the monthly meeting held December 7th, 1876, President Kennedy in the chair, 33 members and students were present. Messrs. Boring, Miller and Procter each presented 10 specimens of officinal drugs and preparations for the consideration of the students, who manifested a lively interest in their examination.

Dr. Miller remarked on the adulteration of wax, as practised in commerce, mentioning one lot in which it reached 75 per cent. He submitted mixtures of wax, paraffin, Japan wax and stearin, seven in number, in which two or more of these were combined. That of paraffin and wax seemed to be the most dangerous imitation.

President Kennedy read a paper on Aquæ Medicatæ of the "Pharmacopœia" (see page 7).

Mr. N. A. Kuhn, of the Class of 76–77, read a paper on oil of Ceylon cinnamon leaves (see page 12), in reply to a query accepted by him at the last meeting.

A communication from Prof. Remington in reference to Alpha Phi Society of the Philadelphia College of Pharmacy was read. He stated that the society was formed by the first course students to assist them in preparing for a junior examination, which was recommended by the convention of teaching colleges. The members of the society were invited to attend the future monthly meetings of the association.

Mr. Boring stated that he had great difficulty in procuring colchicum root of a quality answering the prescribed conditions. Careful garbling giving but 3½ ounces of white root from a pound of a handsome looking specimen.

President Kennedy alluded to the change to a light orange color of a carefully kept specimen of Lautier Fils' orange flower water, no other deterioration being noticed.

Dr. Miller spoke of the fine quality of the "Matières Premières" shown by this firm at the Exhibition. In referring to the adulteration of food, poisonous coloring matters were mentioned which were constantly sold to confectioners, such as chrome yellow and even Paris green. He suggested, as the best means of avoiding the use of these, that good practical formulas should be made known through the journals, so that apothecaries generally could prepare them on demand. As a thesis subject it gives a wide field of research, and even a single good color obtained would be an important advantage to the health of the community.

After some reference to irregular prescriptions, and to other subjects of minor importance, the association adjourned until January 4th.

WALLACE PROCTER, *Secretary.*

EDITORIAL DEPARTMENT.

The Journal.—The present number appears with a few typographical changes, among which the type selected for the various headings will be found to be more serviceable and useful than that hitherto employed.

The new volume opens with a gratifying number of original articles, and among the contributors we are pleased to welcome not only several whose names are not unfamiliar to our readers, but also others who offer their observations for the first time directly to our readers. In examining the various original papers, it will be observed that the majority have a direct practical bearing upon manipulations and processes in almost daily use in the store and laboratory, and are suggestive of further extended applications. Scientific subjects, of interest to pharmacists, are discussed in two papers, and in another a hygienic question of general importance receives proper attention. Of similar interest and import, direct or suggestive, will be found the various essays which have been selected from our cotemporaries, and appear in the present number, either unabridged or in a condensed form.

In thanking the numerous contributors to the present and the past issues of the JOURNAL, we would, at the same time, request all our readers to take notes of their observations with the various officinal and unofficinal processes, of improvements in apparatus and manipulations, of unexpected reactions, in short, of every occurrence that may possess or appear to possess some interest, and communicate the same to the editor, with the view of laying them before our readers.

In this connection, we desire also to call the attention of our friends to the advertisement of the Publishing Committee in relation to back volumes of the JOURNAL. It will be observed that a considerable reduction has been made for many of the volumes and single numbers, and many will doubtless find it to their advantage to complete, to some extent, their sets at the low price at which they are offered. By the use of the excellent Index, prepared by Mr. H. M. Wilder, for the first forty-two volumes, all the material contained therein becomes readily available. It is stated by the committee that many of the volumes and numbers thus offered are in stock to a limited extent only, so that the offers now made are likely to be withdrawn as the stock is diminished.

Hydrobromic Acid.—In some papers by Dr. J. Milner Fothergill, originally published in the "British Medical Journal," and recently reproduced by several medical journals in this country, attention is drawn to the medicinal properties of hydrobromic acid and to a formula for its preparation, which originated with Dr. Dewitt C. Wade, and appeared in the "Peninsular Medical Journal" for February, 1875. The formula directs to dissolve ℥x ʒvi gr.xxviii of bromide of potassium in four pints of water, and add ℥xiii ʒi gr.xxxvii of tartaric acid; bitartrate of potassium is produced, the greater part of which crystallizes out, and a solution of hydrobromic acid in water, containing also some potassium bitartrate, is left.

Although various processes for the preparation of hydrobromic acid directly from bromine have been published in former volumes of this journal and in other publications, the necessity of adopting various precautions to avoid accidents in consequence of possible violent reactions seems to speak in favor of a simpler process, which can readily be followed even by the unexperienced, and though the acid thus obtained may not be chemically pure; and such is the one recommended by Dr. Wade.

By calculation from the molecular weights, it will be found that the potassium bromide is slightly in excess, which is perhaps rather an advantage. But a considerable difference in the strength of the hydrobromic acid will be found, as the weights and measures of the British or United States "Pharmacopœia" are used. With the former, the hydrobromic acid obtainable from 4731 grains potassium bromide will be contained in 80 fluidounces imperial measure (Oiv Imp. Meas. = 76⅘ f℥ U. S.), which gives 40¼ gr. HBr to the fluidounce. Operating with the weights and measures as employed in this country 3531 grs. HBr, obtainable from 5188 grs. KBr, will be contained in 64 fluidounces, or 55⅓ grs. per f℥i. In these calculations the increase in bulk from dissolved compounds has been disregarded.

The last figure gives probably the strength which is intended; but by a slight modification of the weights a much more convenient formula will be obtained, since the weights can be accurately reduced to a single fluidounce. We propose therefore to take

f℥i	water, 80 grains . .	potassium bromide,	100 grains . .	tartaric acid,	
Oi	" 2 troyoz. 320 grs.	"	" 3 troyoz. 160 grs.	"	"
Oiv	" 10 " 320 grs.	"	" 13 " 160 "	"	"

The bromide should be dissolved in three-fourths of the water and the tartaric acid in the other fourth; after mixing the solutions well, it will be found advantageous to expose the mixture for some time to a temperature of about 32° F., and allow the greater portion of the cream of tartar to crystallize out. With the above proportions there will still be a slight excess of potassium bromide, and the preparation will be equal in strength to that obtained by Dr. Wade's formula. It is scarcely necessary to remark that the cream of tartar thus obtained, after having been washed with cold water, is very pure and may be utilized.

Our readers are aware that in the preparation of monobromated camphor (see "Amer. Jour. Phar.," 1872, p. 337) one-half the bromine used is converted into hydrobromic acid and may be obtained without trouble by passing the gas into water.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Popular Health Almanac for 1877. Edited by Frederick Hoffmann. New York: E. Steiger.

A year ago we had the pleasure of noticing the first issue of this publication; it entered upon its mission with the praiseworthy object, to furnish useful information on matters of health, and we believe that it has fulfilled its mission creditably. That it has met with favor, wherever it became known, is evidenced by the issue now before us, which in every respect fulfills the expectation formed on perusing the former, and we hope that it may find its way into the home of every family, for each will find in it information useful for every member.

The health articles are on the subjects of hygiene, water supplies, cleanliness and bathing, furnace-heating, care of the teeth, first help in accidents and emergencies, first treatment and antidotes for poisons, nostrums and their composition, and statistics of mortality. Besides these, various other articles and notes aim to impart useful knowledge, among them tables comparing the metric with the common weights and measures. An appendix contains an acceptable *Kindergarten* tract, and some instructive information on the use of salicylic acid in the household; the latter found its way here evidently as an advertisement, and we cannot therefore hold the editor responsible for information belonging in a medical treatise rather than in a popular health guide, like the directions for the use of salicylic acid in diphtheria, acute rheumatism, epidemic fevers, etc.

The almanac deserves the hearty support of physicians and pharmacists, both being particularly interested in its widest distribution.

Pharmacological Dictionary, a Lexicon of Pharmaceutical Terminology; containing all the Terms of the "Pharmacopœias" of the United States and Germany, in English, German and Latin, with all Popular Dialectic or Provincial German Names of Drugs, Herbs, Medicines, Preparations, Concoctions, Decoctions, Infusions, and their English Synonyms, Alphabetically arranged. For the use of Druggists, Physicians, Chemists, Students, and the German-American Public.

By Dr. Robt. Karl Beer. Baltimore, 1876: Beer & Sadler. 16mo, pp. 80. Bound; price, $1.50.

The lengthy title of this little volume explains the aims the author had in view in preparing it. In the first place, it was intended—so the preface informs us—to be used by physicians who, with the author, are reading German medical works in the original; it was natural to endeavor to make it useful and acceptable also to a larger circle.

The first and smaller portion is the English-German part, containing the English and Latin names of the U. S "Pharmacopœia," with their German synonyms. In this, unnecessary repetitions have been very judiciously avoided; thus infusions, tinctures, etc., are given only by their English names, without repeating them again under Infusum, Tinctura, etc.

The second, or German-English part comprises nearly two-thirds of the whole, and does not contain the Latin terms as officinal in Germany, except occasionally as the equivalent of the German word, in which connection it should have been replaced either by the English synonym or by the Latin term as employed in our "Pharmacopœia." On the whole, however, these will not occasion much inconvenience; but for some of the Latin terms employed in this part we should have preferred the proper English term, if known here, or the full botanical name; thus, instead of radix hydrolapathi, root of Rumex aquaticus would have been clearer to the great majority of American pharmacists.

We believe the little work to be useful to all those classes enumerated in the title in their intercourse with the German-speaking population, and in reading pharmaceutical works in the German language, and as such recommend it to our readers.

The Chemists' and Druggists' Diary, 1877. Published at the office of the "Chemist and Druggist," London.

This annual publication contains a large number of formulas and recipes, old and new, collected from various sources and embracing pharmacy, medicine, perfumery, specialties, etc., also a great deal of information which is of special interest to the British pharmacist.

Medicinal Plants, being descriptions with original figures of the principal plants employed in medicine, and an account of their properties and uses. By Robert Bently, F.L.S. and Henry Trimen, M.B., F.L.S, etc. Philadelphia: Lindsay & Blakiston. Parts 9–12. Price, $2.00 each.

The descriptions and plants contained in the four numbers before us comprise the following species: Cissampelos pareira, Podophyllum peltatum, Cistus creticus, Geranium maculatum, Polygonum bistorta, Myristica fragrans, Curcuma longa, Vanilla planifolia, Viola odorata, Cinnamodendron corticosum, Krameria triandra and ixina, Toluifera Pereiræ, Tamarindus indica, Valeriana officinalis, Hyoscyamus niger, Jateorhiza calumba, Aegle marmelos, Picræna excelsa, Rhamnus frangula, Rubus villosus, Artemisia absinthium, Taxus baccata, Cochlearia armoracia, Trigonella foenum-græcum, Rosa gallica, Fraxinus ornus, Thymus vulgaris, Daphne mezereum and Pinus sylvestris.

As heretofore, the plates are excellently executed in design and coloring, and the descriptive text is clear and reliable. Regarding the illustration of the Peru balsam tree, it may not be amiss to state that the figure of the fruit is a true representation of what was handed to us nearly fifteen years ago as the fruit of the tree from which Peru balsam is produced, and which may have come from Dr. Dorat, from whose specimens the figures were drawn; but we were unable to trace our specimens beyond the United States At the late International Exposition the Mexican Society of Natural Sciences exhibited an extensive collection of drugs, among which were specimens of a fruit labeled *Myrospermum Pereiræ*, which, though agreeing in

general characters with that of the Toluifera figured, was markedly distinct from it by being much shorter and nearly orbicular-oblong. The Mexican Catalogue stated that the tree grows in warm and damp places in the State of Morelos and other parts of Mexico, and that its fruit and bark are employed as balsamic stimulants and in the preparation of a dye. Though Peru balsam was also exhibited, we could not ascertain whether it had been really produced from the species or variety yielding the fruit described.

OBITUARY.

Cristian Edward Eyster died in Duluth, Minn., Nov. 13th, aged 29 years. He entered the drug business in 1865 in his native town, Chambersburg, Pa., and graduated at the Philadelphia College of Pharmacy, 1869. In 1870, he embarked in business in Duluth, where he continued until the date of his death. His social qualities, upright and enterprising business career and uniform Christian life render his untimely death a sad affliction to his family and a loss to the business he so creditably represented.

CATALOGUE

OF THE

Class of the Philadelphia College of Pharmacy,

FOR THE FIFTY-SIXTH SESSION, 1876-7.

With a List of their Preceptors and Localities.

Matriculants.	*Town or County.*	*State.*	*Preceptor.*
Albrecht, Antonius Carl.	Philadelphia,	Pa.	
Albright, Franklin Pierce,	Allentown,	Pa.	Van Buskirk & Apple.
Allen, Jno. Hays, Jr.,	Montoursville,	Pa.	B. N. Bethel.
Allen, Jno. Reese,	Wilmington,	Del.	James Kemble.
Ancker, Louis,	Charleston,	S. C.	G. W. Notson.
Angier, James Watson,	Darby,	Pa.	J. B. Shaw.
Appenzeller, Gustav Adolph,	Carlsruhe,	Germany.	T. C. Weatherly.
Ashe, Cincie Braxton,	Selma,	Ala.	Cawthorn & Coleman.
Bache, Benjamin Franklin,	Bristol,	Pa.	Bullock & Crenshaw.
Ball, William Amos,	Youngstown,	Ohio.	J. L. Patterson & Bro.
Barnard, Geo. Luther.	Ashland,	Pa.	C. H. Seary.
Barr, Samuel Earnest.	Mt. Vernon,	Ohio.	E. P. Camp.
Barnitz, Jno. Stevenson,	Chambersburg,	Pa.	G. E Musselman.
Barton, Charles Edwin,	Mansfield,	Ohio.	W. W. Moorhead.
Baume, Franklin Derr,	Reading,	Pa.	P. M. Ziegler.
Beale, Charles,	Philadelphia,	Pa.	Edward Beale, M.D.
Beckert, Theodore Frederick,	Pittsburg,	Pa.	J. F. Caldwell.
Beetem, Jacob Samuel,	Carlisle,	Pa.	S. S. Bunting.
Beitermann, William Wallace,	Hamburg,	Pa.	G. W Dougherty.
Bellows, Charles Edward,	Bridgeton,	N. J.	W. Notson, M D.
Bennett, M. Knight,	Vincentown,	N. J.	F. S. Hilliard.
Betz, Herman,	Burlington,	Iowa.	C. P. Squire & Co.
Biddle, Richard,	Philadelphia,	Pa.	
Bissell, Emery Gilbert,	Waterville,	N. Y.	M. J. Bissell.
Bobb, Wallace Geary,	Philadelphia,	Pa.	V. H. Smith & Co.
Bossett, William Cowper,	Philadelphia,	Pa.	G. B. Loomis.
Bowman, Charles Alexander,	Nashville,	Tenn.	Wharton & Co.
Boyer, Edward Dayton,	Catasauqua,	Pa.	W. K. Mattern.
Brennecke, Robert Henry,	Watertown,	Wis.	E. B. Garrigues & Co.
Brown, David Howell,	Middletown,	N. Y.	Lancaster Bros.
Brown, George Walbridge,	Jamestown,	N. Y.	A. L. Helmbold.
Brown, Thomas Trew,	Chestertown,	Md.	Jno. Wyeth & Bro.

Matriculants.	*Town or County.*	*State.*	*Preceptor.*
Brunner, Norman Isaac,	Macon,	Ga.	S. D. Everett.
Buchanan, Andrew,	Chester,	Pa.	M. H. Bickley.
Burns, Seymour S.,	Minersville,	Pa.	Bowen & Burns.
Burroughs, Silas Mainville,	Medina,	N. Y.	E. P. Healy, M.D.
Busch, Wm. Charles Asmus,	Davenport	Iowa.	Henry Ditzen
Byerly, Charles Henry,	Lock Haven,	Pa.	Mort. H Eayere, Ph.G.
Chabot, Wash. Jackson,	Philadelphia,	Pa.	J. A. Millac.
Childs, Walter Foss,	Norristown,	Pa.	F. B. Poley. M.D.
Christman, Harry Warren,	Norristown,	Pa.	W. Stahler.
Cloud, Harlan,	Chester,	Pa.	W. B. Ulrich.
Conway, William Henry,	Philadelphia,	Pa.	Jos. P. Remington.
Correll, Cornelius,	Springfield,	Ill.	L. S. Correll.
Corrie, William,	Philadelphia.	Pa.	Peter Cruice.
Cox, Harry,	Philadelphia,	Pa.	W. E. Lee.
Cox, Harry Oscar,	Gloucester,	N. J.	D W. Blake, M.D.
Coxey, Joseph Clarence,	Philadelphia,	Pa.	H. W. Miller.
Craig, Thomas Canby,	Chambersberg,	Pa.	C. H. Cressler.
Craighead, Thomas,	Philadelphia,	Pa.	George S. Craighead.
Crane, Henry Bedell,	Newton,	N. J.	H. H. Ross.
Crowl, Frank Mercer,	Oxford,	Pa.	George Cooke.
Curran, John Augustus,	Philadelphia,	Pa.	W. H. Pile.
Custis, Daniel Parke,	Tallahassee,	Fla.	
Davidson, Abraham,	Helmarshausen,	Germany.	H. L. v. Wittkamp, M.D..
Davis, Isaac,	Philadelphia,	Pa.	G. H. Davis.
Davis, Marshall Moses And.	Philadelphia,	Pa.	F. E. Himmelwright.
Davis, Nehemiah,	Smyrna,	Del.	John R. Haney, M.D.
Davis, Theodore Garrison,	Bridgeton,	N. J.	C. F. Dare,
Davy, George William,	Philadelphia,	Pa.	Bullock & Crenshaw.
Day, Wallace Melancthon,	Chicopee,	Mass.	Frank S. Dickinson.
Day, William George,	Hillsborough,	Md.	W. F. Fleming.
Dean, Norman R.,	Attleborough,	Pa.	Israel I. Grahame.
Dembinski, Louis,	Philadelphia,	Pa.	A. Oppermann.
Deprez, William Henry,	Shelbyville,	Ind.	John Weingarth.
DePuy, Caspar Edward,	Iowa Falls,	Iowa.	Foster & Hoag.
Dickeson, William Eunice,	Media,	Pa.	J. W. Dickeson, M.D.
Douglass, Samuel Milton,	Johnstown,	Pa.	C. T. Frazer.
Drancourt, Samuel,	Paris,	France.	Wyeth & Bro.
Driscoll, Edward William,	Philadelphia,	Pa.	J. D. Marshall & Bro..
Driver, Joseph Bingham,	Darlington,	Wis.	James Hillis.
Drueding, Charles Caspar,	Cloppenburg,	Germany.	Charles Bauer.
Drueding, Francis Fred.	Cloppenburg,	Germany.	George W. Eldridge.
Drueding, Henry Gerhard,	Cloppenburg,	Germany.	Luther Gerhard.
Elfreth, Jacob R.,	Philadelphia,	Pa.	W. H. Pile & Sons.
Evans, Albert,	Asbury,	N. J.	L. W. Adams
Evans, J. Henry,	Philadelphia,	Pa.	W. D. Harrison.
Evans Henry William,	Danville,	Ky.	Samuel & Warner.
Ewing, George Washington,	Philadelphia,	Pa.	J. L. Bispham.
Falck, John Aiken,	Lancaster.	Pa.	Robert C. Sharp.
Fawkes, David Wilmot,	Wilmington,	Del.	E. Bringhurst & Co.
Federer, Ernest Charles,	Sandusky,	Ohio.	C. Shivers.
Feil, Joseph,	Cleveland,	Ohio.	P. Fitch, M.D.
Fell, Theron Edwin,	Bloomington,	Ill.	A. L Fox, M.D.
Fisher, Henry,	Philadelphia,	Pa.	Bullock & Crenshaw.
Fosselman, Charles,	Emporia,	Kansas.	John W. Read.
Früh, Gustav Adolph,	Philadelphia,	Pa.	Carl D. S. Früh.
Fulton, Joseph Miller,	New London,	Pa.	James Fulton, M.D.
Funk, Christian Lawson,	Hagerstown,	Md.	H. C. Blair's Sons.
Galling, Fred. Joseph,	Beaver Dam,	Wis.	J. Kenworthey, Ph.G..
Garcia, Amador de Jesus,	Santiago,	Cuba.	Julius Frenard.
Gardner, Charles Herman,	Spruce Creek,	Pa.	Jos. P. Remington.
Garman, Samuel Franklin,	Lykens,	Pa.	Jonas Garman.
Gates, Burt Pike,	Saratoga,	N. Y.	Henry D. Jones.
Gerling, John Miller,	Cleveland,	Ohio.	Vaupel & Moore.
Gingrich, John Adam,	Lebanon,	Pa.	A. W. Bley.
Grahame, George Harris,	Philadelphia,	Pa.	Israel J. Grahame.
Gray, George Washington,	Philadelphia,	Pa.	Isaac Tull.
Graybill, Peter,	Annville,	Pa.	D. G. A. Bachman.
Greig, George Horace,	Allegheny City,	Pa.	
Griffin, Louis Franklin,	Houston.	Texas.	John R. Angney.
Griffith, Albert Richard,	Oil City,	Pa.	
Goess, George Conrad, Jr.,	Philadelphia,	Pa.	P. H. Horn.
Groves, Freytag,	Philadelphia.	Pa.	M. F. Groves, M.D.
Hall, Harry Augustus,	Danville,	Ill.	W. F. Baum.
Hano, Simon Louis,	Philadelphia,	Pa.	H. B. Lippincott,
Harris, William,	Chester,	Pa.	Robert Howath.
Harrison, John Windham,	Wheeling,	W. V.	Logan, List & Co.
Hendricks, Elwood Gouldy,	Centre Point,	Pa.	W. K Mattern.
Hewitt, Andrew Crawford,	Philadelphia,	Pa.	C. L. Eberle.

Matriculants.	*Town or County.*	*State.*	*Preceptor.*
Higgate, Wilford Oldham,	Philadelphia,	Pa.	Wm. B. Webb.
Hilton, George Perry,	Belvidere,	N. J.	R. A. Boyd.
Hoguet, William,	Bristol,	Pa.	Louis Hoguet.
Holden, Chas. Vernon.	Bloomington,	Ill.	Ira Lackey.
Horner, James Walker,	Stratford,	Canada.	Henry Blithe.
Hubbard, Ph. Wadsworth,	Hiram,	Maine.	
Hudgin, Edward Lee,	Galesburg,	Ill.	Isaac V. Smith.
Hudson, Leonard Adkins,	Milford,	Del.	E. E. Hazlett.
Hughes, Thomas,	Richmond,	Ky.	J. P. Herndon.
Hurley, David George,	Lebanon,	Pa.	J. L. Lemberger.
Jarvis, Franklin Pierce,	Selma,	Ala.	Cawthorn & Coleman.
Jenkins, Llewellyn Price,	Lamford,	Pa.	W. E. Lloyd.
Jones, Isaac Penrose,	Williamsport,	Pa.	L. A. Dix, M.D.
Kelley, Robert,	Philadelphia,	Pa.	Mellor & Rittenhouse.
Kern, James Picor,	Philadelphia,	Pa.	A. H. Yarnall & Co.
Kernan, Joseph Halbert,	Carlisle,	Pa.	T. J. Husband.
Kernan, Thos. Ed. Barron,	Philadelphia,	Pa.	McKelway & Borell.
Kilbride, John Jackson,	White Deer Mills,	Pa.	George J. Kilbride.
Killingbeck, Wm. John,	Camden,	N. J.	Wm. Trinder.
Kinports, John Henry,	Annville,	Pa.	John E Grove.
Kinports, Philip Stein,	Annville,	Pa.	Clement B. Lowe.
Klopp, Eli Leinbach,	Stouchsburg,	Pa.	Samuel Gerhard.
Koehler, Walter Wm.,	Roxborough,	Pa.	Chas. E. Davis.
Kramer, Howard Samuel,	Allentown,	Pa.	T. A. Walker, Ph.G.
Kroeg, Andrew Alex.,	Charleston,	S. C.	A. M. Wilson.
Krout, Albert,	York,	Pa.	T. Y. Hoskinson.
Kuhn, Norman Archibald,	Salem,	Ohio.	R. P. Trimble.
Laciar, Henry Jacob,	Bethlehem,	Pa.	Lancaster Thomas.
Lamhofer, Edward,	Grand Island,	Neb.	D. Ackerman, Jr.
Landschutz, Peter,	Philadelphia,	Pa.	Jos. Landschutz.
Lardner, Wm. Sheppard,	Niles,	Mich.	Hansell & Bro.
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THE METRICAL SYSTEM IN PRESCRIPTIONS.

By John M. Maisch.

(*Read at the Pharmaceutical Meeting January* 16, 1877.)

Under the above title, Dr. Albert N. Blodgett of Boston has communicated a paper to the Boston "Medical and Surgical Journal" of Dec. 21, which was also copied, without comment, in the "Druggists' Circular" for January. The avowed purpose of Dr. Blodgett's article is to comment upon a paper, written by me for the "Medical and Surgical Reporter" of Philadelphia, Sept. 9, 1876, and republished in the October number, 1876, of the "Am. Jour. Pharm.," in which I endeavored to show how, with little trouble on the part of physicians, not only the solid articles, but likewise the liquid preparations of our present "Pharmacopœia" might be prescribed by metric weights. The latter part of my subject is the main, perhaps the only fault, which Dr. Blodgett has to find with my paper, and which he criticizes as follows: "The guide which most physicians follow in prescribing liquids is the volume of the liquid employed; and this principle finds a ready and simple application in the metrical system as adopted in the larger universities and hospitals of Europe where this system is in use, as well as in the hands of scientific men generally in those countries—a fact which I am sorry Professor Maisch has overlooked."

Now, in discussing the use of the metrical system in *prescriptions*, the question should not be mixed up with the manner in which that system is employed in the various arts and sciences. I am well aware that *measures* are at the present time more frequently employed in chemical assays than weights, and have employed them myself for many years; but as to their use in pharmacy, it is stated in my paper above referred to that "*the Pharmacopœias of Continental Europe and the prescriptions of physicians in those countries express all quantities by weight only, whether the material directed be solid or liquid.*" In the pas-

sage quoted before, Dr. Blodgett hints at a different practice *in the larger universities and hospitals of Europe*, and in another place makes the statement that "the druggist is expected to know how to dispense the articles without the special signs gmm. or cc., and to understand solids as prescribed in grams and *liquids in cubic centimetres*." Let us examine the correctness of these assertions.

Professor Dr. Carl D. von Schroff, of the University of Vienna, in his valuable "Lehrbuch der Pharmacologie" uses the following language: "The doses of medicines are measured by *weight*" (Die Arzneigabe messen wir nach dem Gewichte); and again: "Liquid medicines likewise are very properly measured *by weight*" (Auch die flüssigen Arzneien werden mit Recht durch das Gewicht gemessen). Dr. Hager in his "Erster Unterricht des Pharmaceuten" explains the manner of weighing liquids correctly, and very properly remarks that "an excess of one in mixtures is a loss and indicative of negligence (lüderliche Arbeit);" also that "an exact and conscientious apothecary *weighs always correctly*." Prof. A. Andouard of Nantes remarks in his "Eléments de Pharmacie" that the prescribing *by drops* is defective, and should always be replaced by prescribing *by weights*, the only method by which errors in doses can be avoided (La prescription médicale par goutte est défectueuse et devrait toujours être remplacée par la prescription en poids, la seule qui ne puisse donner lieu à des erreurs de dosage).

The use of *weights only* in the making of pharmaceutical preparations and in the dispensing of prescriptions is so well established throughout all Europe, with the sole exception of Great Britain, that since the adoption in medicine of the metrical system by the different nations of Europe, the proportions of the various ingredients in formulas and prescriptions are usually given in figures only, because every interested person understands that these figures represent grams *in all cases*, and not merely grams for solids and cubic centimetres for liquids. For this reason, the designation *gram* is usually not met with; but the observant peruser of European pharmaceutical and medical literature may glean from many incidental remarks that weights alone are intended in all cases, unless otherwise directed. Dorvault's "l'Officine" (8th edition, 1872) contains numerous formulas from the various pharmacopœias, formerly officinal in Great Britain, and in all cases the weights and measures have been calculated in the approximate gram-values; nevertheless the

word gram is never employed in any formula, unless another weight value besides gram has been given, as for instance in the formula for *pyroléine de colza* (p. 549), for the preparation of which *Huile de colza* 500 *kil.*, *Minium* 250 *gr.* are directed. If measures are intended instead of weights, they are always specially indicated, like in the formula for alcoholic hydrocyanic acid (p. 209) which reads: *Acide cyanhydrique anhydre* 1 *volume*, *Alcool* 6 *volumes*. That the same rule holds good also for prescriptions may be easily learned from the introductory remarks to the chapter on potions (pp. 741, 742), where the *weight* of the ingredients and of the medicine is three or four times referred to, as for instance in the following sentence: If a potion consists only of a mixture of one or several syrups with medicated waters or ptisans, the syrups are first weighed and afterwards the water (Lorsqu'une potion ne consiste que dans un mélange d'un ou plusieurs sirops avec des hydrolats ou des hydrolés, on *pèse* d'abord les sirops, puis les eaux).

Prof. E. Soubeiran says on the same subject in his "Traité de Pharmacie" (edit. 1847, I, p. 219): Ordinarily there enter into the composition of potions a syrup in the quantity of 30 to 60 grams, distilled waters, vegetable infusions in the quantity of 60 to 120 grams (Il entre ordinairement dans la composition des potions un sirop à la dose de 30 à 60 grammes, des eaux distillés, des infusions végétales à la dose de 60 à 120 grammes).

The medical and pharmaceutical literature of the continent of Europe bears abundant evidence that prescriptions and formulas are always given by weight, and when they are copied from English or American periodicals, the values are usually translated in grams. If further proof was needed, it may be mentioned that the posological tables appended to the recent pharmacopœias of continental Europe give the doses invariably in the metric weight, as they formerly did in grains, but never in metric measures, as the following few quotations from the table of maximum doses of the German "Pharmacopœia" will prove:

	Grammata Pro dosi.	Grammata Pro die.		Grammata Pro dosi.	Grammata Pro die.
Kreosotum,	0·05	0·2	Tinctura Cantharidum,	0·5	1·5
Liquor Kali arsenicosi,	0·4	2·0	Tinctura Iodi,	0·3	1·2
Oleum Crotonis,	0·06	0·3	Tinctura Opii simplex,	1·5	5·0

"In giving ol. ricini," says Dr. Blodgett, "nobody estimates the dose by its absolute weight in grains on the scale." If this is intended to refer to the patient, nobody will object; but if to the physician and

pharmacist, Dr. Blodgett is decidedly in error. Says Dorvault (p. 543): "It is frequently given as a mild purgative in the dose of 15 to 60 grams." (On l'emploie fréquemment comme purgatif doux, à la dose de 15 à 60 grammes.) The fact is that physicians and pharmacists, who study in Europe, are taught and become acquainted with the doses of all drugs, chemical and galenical preparations *by weight only*, and for the former to prescribe by measures would involve the same amount of labor that Dr. Blodgett objects to would be entailed upon our physicians, if they were to follow the plan proposed by me in the previous paper. But it should be remembered that any change of an established system will cause some inconvenience, until the new system has gained a firm foothold, when its use will be found quite as convenient—and in the case under discussion even more so—than the one which preceded it.

The greater convenience and correctness of weights have long since been recognized in the wholesale drug trade. Acids, copaiba, Peru balsam, volatile oils and medicinal spirits are always sold by weight, and within a few years the practice of selling castor oil by the gallon was, to the satisfaction of all dealers, changed to that by the pound. Our "Pharmacopœia" even recognizes the correctness of this fact by having changed, in the last two revisions, all measures of the liquid acids, of chloroform, olive oil and honey into weights. If these liquids are more conveniently and correctly handled by weight, why not likewise glycerin, syrups, tinctures, ethers, etc.? And if a change to the metric system is to be made in pharmacy and medicine, why not make it at once far enough, instead of halting half way, which would render another change in the future necessary?

But it might be urged that chemical analysis is nowadays more extensively performed by the volumetric than by the gravimetric method. While admitting the correctness of this preference, it should be borne in mind that the test liquids—special cases excepted—are all aqueous solutions, which show a like expansion and contraction with the rising and falling variation from the normal temperature. Such is not the case with the various liquids which are medicinally employed; and the relative weights of liquids entering into a mixture and measured at different temperatures, must therefore, necessarily, vary, even if they had been measured with instruments constructed like the pipettes and burettes employed in volumetric analysis, instruments

which are entirely impracticable for the dispensing of most medicinal liquids; and that the probable errors of reading from the graduated measures, as usually constructed for pharmacists, are much larger and increase with the quantity, must be evident to every intelligent observer.

To these considerations must be added some other very important ones, namely, the great volatility of some liquids at ordinary temperatures, and the tenacious adhesion of others to the graduated vessels. The dispensing of liquids by weight offers, for all the reasons advanced, by far greater accuracy than could be attained by measures, even if they were constructed upon the same principle as burettes and pipettes; and that the difficulties of dispensing by weight are not greater than by the use of measures will readily be acknowledged by those who have *accustomed* themselves to the former practice, and this, it seems to me, will become the duty of American apothecaries in the near future.

The physician now in practice will encounter some difficulties in adapting his knowledge and experience to the change under consideration, and to aid him in this, and show that it must not be considered an impossible task, even with our present "Pharmacopœia," was one of the main objects of my previous paper; after the metric system shall have been fully recognized in medicine and pharmacy, the students of both medicine and pharmacy will learn the proper doses of all drugs and preparations by weight, and consequently prescribe and dispense them thus.

A common oversight by many physicians may here be incidentally alluded to, namely, the fact that solids dissolved in liquids occupy a certain space, depending in part upon their own specific gravity and upon the nature and quantity of the solvent. On the other hand, it is frequently overlooked that on mixing certain liquids a contraction takes place, as in the case of alcohol or concentrated acids with water. No uniformly applicable rule can be given for these occurrences, and in most cases the difference in the expected measure falls within the variations of the approximate measures to which the patient has recourse. For the salts of the alkalies, alkaline earths and even the lighter metals, it may be assumed that in solution they occupy the space of about one-third their weight of water. This is not absolutely correct, but it is very convenient and sufficiently approximate for calculating the dose. Dr. Blodgett gives a formula for potass. brom., grm. 12; syr. simpl., aq. font., *āā* cc. 60, which it seems was expected

to measure 120 cubic centimetres, or 8 tablespoonfuls; in reality, however, it will be found to measure rather more than 123 cubic centimetres, an excess of about $2\frac{1}{2}$ per cent. over the expected volume. If such a prescription, without the signs *grm.* and *cc.*, was dispensed by a pharmacist conversant with the practice of continental Europe, it would measure a little over 108 cubic centimetres, a deficiency of $9\frac{3}{4}$ per cent. of the expected volume, equal to a difference of about 7 per cent. between the variations from the expected measure, the combined difference being $12\frac{1}{4}$ per cent., or less than the variation in the approximate measure of the tablespoonful, which is usually assumed to be 15 cubic centimetres (about half a fluidounce), while the French "Codex" gives it at 20 grams (or cubic centimetres) of water, a difference of 33 per cent. on the smaller, and of 25 per cent. on the larger measure.

In this connection it may not be out of place to mention some typographical errors, which, however, are easily recognized as such. In Dr. Blodgett's paper, as published in both journals mentioned above, it is said that the gram equals in volume 16·2318 minims, or about "quarter of a fluidounce"; this should read, "quarter of a fluid drachm." In the "Proceedings of the Amer. Phar. Assoc.," 1876, p. 677, the writer is made to say that "30 drachms of water make 2 tablespoonfuls, and 40 drachms of syrup about the same measure." The word "drachms," it is obvious, should read, in both cases, "grams."

After all these considerations, it must be quite plain to the physician and pharmacist that, in prescribing by metric weights, with the few simple rules advocated in my previous paper, any variation between the intended and the actual amount of even a potent medicine ordered must, in the approximate apportionment of doses by the patient, naturally fall considerably within the limits of the variation of these approximate measures usually employed; and that, unless *maximum doses* were directed, in which case it would be the special duty of the physician to examine the *approximate measures* on hand, no inconvenience or danger to the patient could result.

In the above I have alluded only to the practice on the continent of Europe; how is it upon the western hemisphere? A paper by Prof. C. G. Wheeler, of Chicago, presented to the Amer. Phar. Assoc. at its last meeting (see "Proceedings," 1876, p. 441) throws some light upon this, and we learn, in the countries named there and probably upon

the entire continent of South America, there is no officially published "Pharmacopœia," but that those of various European nationalities are used. Since Portugal and Spain employ metric weights only in the preparation and dispensing of medicines, it is fair to presume that these are employed almost to the entire exclusion of measures.

Cuba naturally follows the mother-country, Spain, and with the pharmaceutical journal, "La Emulacion," as far back as 1863, before us, we learn that the metric weights have been in use there at that time. The following formulas, taken from that journal of January, 1864, and June, 1865, will show this:

Colodion morfinizada (Collodion with morphia.)

℞.	Colodion elástico (flexible collodion), . .	30 gramos
.	Hydroclorato de morfina (muriate of morphia), .	1 gramo

H. s. a. (Mix according to art).

Electuario antiblenorragica (Antiblennorrhagic Electuary).

℞.	Tanato manganico (tannate of manganese), .	25 centígramos
	Polvos de cubeba (powdered cubebs), . .	30 gramos
	Bálsamo de copaiba (copaiva), . .	30 gramos

M. Mix.

Pocion contra la metrorragia (Potion against metrorrhagia).

℞.	Cocimiento de salep (decoction of salep), .	200 gramos
	Acido phosphorico (phosphoric acid), . .	5 idem
	Jarabe de frambruesas (syrup of raspberry), .	20 idem

Una cucharada cada media hora (a spoonful every half an hour).

As far as the writer is informed, besides the United States "Pharmacopœia," there has been only one national "Pharmacopœia" issued on this side of the Atlantic, the latest edition of that work being the "Nueva Farmacopea Mexicana," published in Mexico in 1874. As might have been expected, this work leans on the similar issues of southwestern Europe, and is a production very creditable to the pharmaceutical society by which it was issued. That there, also, weights alone are employed, to the exclusion of measures, will be seen from the following formulas copied from the "Farmacopea," to which, as in the preceding case, the English translations are added:

Alcoholato de Canela (Alcoholatum corticis Cinnamoni).

Canela de Ceylan (Ceylon cinnamon), . .	quinientos gram.	500
Alcohol de 80° (80 per cent. alcohol), . .	cuatro-mil gram.	4000

Hágase macerar la canela en el alcohol por cuatro dias y destílese en B. M. hasta obtener toda la parte espirituosa (Macerate the cinnamon in the alcohol for four days, and distil, by means of a water-bath, until the whole of the spirituous portion has been obtained).

Tintura de Iodo (Tinctura Iodii).

Iodo (Iodine), ...	diez gram.	10
Alcohol de 90° (90 per cent. alcohol), .	ciente-veinte gram.	120

Disuélvase y filtrese (Dissolve and filter).

Agua de Subacetato de Plomo de Goulard (Aqua cum Subacetate Plumbico ex Goulard).

Subacetato de plomo liquido (solution of subacetate of lead),	quince gram.	15
Agua comun (common water), ...	quinientos gram.	500
Alcoholato de Colonia (Cologne water), . .	treinte gram.	30

Reemplazando el agua de Colonia con la misma cantidad de alcohol alcanforado, se tiene el *Agua végeto-alcanforada* (By replacing the Cologne water with the same quantity of camphorated alcohol, the *vegeto-camphorated water* is obtained).

It will be evident from the above that the extent of the countries in which the metric weights are employed in medicine and pharmacy far exceeds that in which the troyounce and measures are used. To do away with these differences, it appears to me, is the aim at the introduction of the metric system; that weights alone are the proper medium for dispensing medicines is no fault or advantage of the system; nor do I conceive the unit to be of any special advantage, except in so far that it bears a simple and easily comprehended relation to the units of length and capacity. Whether the length of the meter has been correctly ascertained or not, is not a question to be considered in this respect, nor how far the unit is divisible by two; no system can be devised which can be indefinitely divided without fractions. To simplify the commercial not only, but also the intellectual intercourse, between the intelligent nations of the earth, is among the primary objects of the movement, in the successful accomplishment of which every physician and pharmacist may and let us hope will take an active part. And as to the special advantages of the metric system, I may be permitted to quote from the concluding paragraph of Dr. Blodgett's paper: "It dispenses with the signs of the quantities; it employs Arabic figures instead of Roman numerals; it assures the physician of more competent service from the pharmacist, and of a better quality of medicines; and, last but not least, it reduces considerably the danger of mistakes on the part of physician and of druggist."

This paper has grown far beyond the limits originally designed for it; in its preparation so many points appeared to present themselves, requiring at least a passing notice, that the writer has to ask the indulgence of the peruser, in the hope that some medical and pharmaceutical matters, which appear as yet to be less understood than they deserve to be, may hereafter attract more attention; and if he has succeeded to awaken the interest of others, he will consider himself amply repaid for the labor.

ADULTERATIONS.

By Adolph W. Miller, M.D. Ph.D.

(*Read at the Pharmaceutical Meeting January 16th*, 1877.)

Some extraordinary accounts of falsification of drugs and chemicals having recently come to the notice of the writer, it is deemed advisable to place an account of them on record. While they embrace perhaps nothing that is absolutely new, the subject is presented in a new phase in so far as it relates to most villainous frauds practised on suffering humanity by apparently respectable druggists, whose only plausible excuse for these rascalities seems to be excessive and ruinous competition in business. It may be prefaced that these statements are not mere hearsay testimony, but that most of them are derived from parties having an actual knowledge of the transactions referred to.

Oregon balsam of fir (so-called) appeared in the New York market several years ago. Prof. Maisch then examined it, pronounced it to be of suspicious appearance, and raised the query: "Is such an article known on our Pacific coast, and if so, what is its source, and how is it obtained?" ("Am. Jour. Pharm.," 1874, p. 106.) This inquiry can now be answered by stating that the article in question emanated from St. Louis, Mo., where it was manufactured by carefully melting two parts of the finest select white rosin with one part oil of turpentine. A small amount, generally about one ounce to five gallons, of oil of wormwood was subsequently added, this having been found to be most efficacious in completely disguising the ordinary terebinthinate odor. The "balsam" was then shipped to a prominent New York broker, who succeeded in selling considerable quantities of it, as the genuine article happened to be at that time unusually scarce and high-priced.

Sulphate of quinia, put up in the usual style of the American manufacturers, has heretofore been regarded as being above reproach. Even our lately much abused dealers in *pure* essential oils of New York, contented themselves with operations in Pelletier's French quinia. My information is to the effect that a year or two ago in one of our Western cities the labels of American manufacturers were deliberately soaked off, after which an admixture of salicin was introduced. The label was then replaced and the article disposed of. Another somewhat more enterprising dealer in the same city had muriate of cinchonia manufactured on his own premises and used this to adulterate sulphate

of quinia to a large extent. In this case the preparation was put up in tin cans, without bearing the name of any manufacturer.

Italian essential oils, chiefly lemon and bergamot, were imported by a Western druggist to the extent of 100 cans in one lot. They were opened, sophisticated to an enormous extent, and again closed with false seals and brands.

While in the East, the adulteration of cream of tartar is almost entirely confined to grocers and spice mills, in the West the wholesale druggists also seem to indulge extensively in this fraud.

The labels and wrappers of English calomel have been successfully imitated in the West, and large amounts of this pseudo-imported chemical have been there disposed of.

If it be not deemed inappropriate to draw a moral from the above facts, which are vouched for by the parties best qualified to do so, this would embrace chiefly two points, namely, an injunction to continued vigilance and close scrutiny of all substances that can be adulterated, and also an appeal for a little more liberality in making purchases. It seems to be conceded that the minimum running expenses of carrying on the wholesale drug business are from 5 to 8 per cent. of the sales; the expense of salesmen varies, usually, from 5 to 25 per cent. of the amount of their sales, 10 per cent. being perhaps a low average. A little calculation will therefore suffice to show that when goods are sold direct to consumers at less than 10 per cent. margin, or through the instrumentality of traveling salesmen at less than 20 per cent. profit, the inference may be fairly drawn that there are just grounds for suspicion in the case.

NOTE ON SYRUP OF IODIDE OF IRON.

By H. P. Reynolds.

The formula of the "U. S. P." for syrup of iodide of iron, if exactly followed, yields, invariably, a satisfactory product, which, in well filled and stoppered bottles, keeps almost indefinitely and is entirely indifferent to indirect light. The bottle once opened, how ever, the slight access of air causes the contents to darken, from the surface downward, and it soon becomes unfit to dispense. To remedy this discoloration, the late Prof. F. F. Mayer has recommended the addition of hyposulphite of soda, others the use of citric and of hypophosphorous acids, and the placing in the syrup of bright metallic iron has proved useful.

There are, perhaps, reasonable objections to all but the latter method, and I venture to offer another, which, so far, seems quite effectual, and which is at any rate new to me, though it may not be so to other readers of the "Journal." If the bottle containing the darkened syrup be placed in a water-bath and brought to the boiling point,[1] the discoloration disappears, the syrup assumes its normal appearance and, if as cautiously preserved as at first, will retain it as well, so far as observed. A sample now before me, thus treated two months ago, being at that time of a dark cherry color, seems now "as good as new." The remnants of syrup left in bottles that have been opened may be collected into one full bottle, thus conveniently restored, and satisfactorily dispensed.

There does not seem to be any evolution of iodine during the heating, and the restoration is probably due to a recombination of separated elements.

Plainfield, N. J., January 3, 1877.

NON-ACTINIC GLASSWARE.

By Hans M. Wilder.

In drug stores are to be found a good many substances (not only chemicals but also galenical preparations) which are very sensitive to light, and much ingenuity has been bestowed upon devices for excluding light. The first thing that suggested itself was to keep such articles in dark closets; these not always being practicable the next thing was to wrap or paste black or dark-colored paper round the respective bottles. This served its purpose perfectly, but did not look nice; then bottles made from black glass (hyalith) were introduced and were in use for many years, having only one drawback, that it was impossible to inspect their contents except by pouring out. This led to the desire to substitute some other color which permitted inspection and, at the same time, guarded the contents against the chemical action of the solar light. Blue, itself a dark color, was next hit upon, under the mistaken notion that it would be as effectual as black, with the advantage of permitting examination of its contents. Unhappily, blue was the worst color which could be selected, and it is a wonder

[1] This process has been recommended by M. E. Fougera, of New York, in 1860; see "Amer. Jour. Phar.," 1860, p. 22.—Editor.

that said notion still prevails, although physicists, many years ago, have proved that chemical action is intimately connected with the blue rays.

The solar spectrum, as is well known, consists of several colors, ranging from violet in the one end to red in the other end ; by further examination it has been proved that, while the greatest heat is found in the red end, the violet end possesses the greatest chemical action. Thus, while red, yellow or orange rays give light enough to see by, for chemically sensitive substances they are equivalent to darkness. Further, we know that when we pass solar light through a colored glass it simply intercepts all rays which are not of the color of the glass, that is to say, we filter away a large portion of the light with the peculiar properties pertaining to it ; consequently we have to employ a color which strains, as it were, the light from the rays which we wish to exclude.

Red glass, being chemically most inactive, was first tried, but being quite expensive it was only employed occasionally ; yellow glass next had its share of attention, but laboring under the same defect (chloride of silver giving the purest yellow) it was discarded and people returned to black and blue glass. In the meantime a cheap substitute for black glass was extensively used, viz.: painting bottles with asphaltum varnish, which answered perfectly, being black by reflected light, and still sufficiently transparent to enable one to examine the contents. On observing that the said varnish, in thin layers and by transmitted light, had an amber-yellow color it was thought that dark-yellow glass, which is quite cheap, might be used, so much the more as it was more elegant.

This dark-yellow glass is produced by carbon (by adding to the melted glass either refuse organic matter or finely powdered coke) ; Splitgerber (Dingler cxxxviii, 292) recommends a small percentage ($\frac{3}{10}$ per cent.) of sulphur ($1\frac{3}{4}$ per cent. sulphate of soda with a little sugar) to white glass. E. Becquerel ("Annales de Chim. et de Phys.," 1843, ix, 263, etc.,) proved that mere traces of finely divided particles completely cut off the chemical rays.

Messrs. Whitall, Tatum & Co., of Philadelphia, were induced to manufacture such glass, and it can now be had at the same price as flint glass bottles.

The "Danish Pharmacopœia," of 1868, was the first (and, as far as known to the writer, still the only one) to direct the use of either

black or yellow bottles for sensitive substances, as chlorine water, calomel, white precipitate and the two iodides of mercury. The writer has kept both chlorine water and sulphuretted hydrogen water for weeks in such bottles, exposed to daylight, without losing their activity. A solution of nitrate of silver has purposely been kept in the show-window (exposed to an occasional sun) for some weeks, and was found as clear the last day as when first made. Powdered savin and digitalis, so prone to change their green color to a dirty yellow, keep very well in yellow bottles. Will it take more than one decade before we see new stores fitted up with amber glass-ware throughout instead of white?

Those desirous of ascertaining the power of a colored glass to exclude obnoxious rays can do so by following Le Nève Foster ("Brit. Jl. of Phot.") If upon a dead-black support is placed a narrow strip of white paper and on top of that a glass prism, the colored rays of the spectrum will be seen; if now a colored glass be placed between the prism and the paper, those rays which the glass absorbs will have disappeared.

Becquerel mentions a curious property of the red rays, that they continue chemical changes if only commenced by the blue rays; which property has been taken advantage of by the earlier daguerreotypists to shorten the time of sitting. The same author mentions (loc. cit., p. 268, note) that Herschel has found the rays which destroy a vegetable color to have the same refractive power as those rays which are of a color complementary to that of the vegetable.

Note by the Editor.—It is often stated that brown-yellow glass owes its color to finely divided carbon; but Pelouze has shown (1865) that the same color is produced also by silicon, boron, aluminium, calcium phosphide and selenium, and depends upon the formation of an alkaline sulphide from the sulphates present. In regard to the action of light upon solutions of nitrate of silver it is quite possible that the amber-colored glass may prevent its reduction in the presence of organic matter; but solutions which are free from the latter will keep equally well in glass stoppered flint glass bottles.

CRYOLITE AND ITS USES.

By Willis Brenton, Ph.G.

(*From an Inaugural Essay presented to the Philadelphia College of Pharmacy.*)

The natural deposits of cryolite of any importance, as far as known, are in the Ural mountains between Russia and Siberia and on the western coast of Greenland, the latter being the great source of our cryolite and the only place where it is mined and exported to any great extent. The deposits at Miask in the Ural mountains are comparatively small and quite impure, in combination with mica, fluor spar, etc., and being so far from civilization—in a mountainous wilderness, with very poor natural facilities for transportation, they have not as yet been of any particular use to the world.

The Greenland deposits are remarkably pure and quite accessible. The veins, of a depth of 80 feet usually, are near the surface and extend along the cliffs for many hundred feet. At this place the Danish government has established a colony, and the mineral is extensively mined and shipped to Denmark, and also to the United States. It was first brought to notice by a missionary who took specimens to Copenhagen, where it was analyzed and afterward imported as a source of crude soda for use in the manufacture of soaps.

Cryolite is a beautiful mineral. It generally occurs in great white masses, partially transparent, of a crystalline structure, and has very much the appearance of snow-ice, from which it has undoubtedly received its name, the Greek word *kryos* signifying ice. Cryolite has come to be quite an item of commerce in this country, and is now imported in quantities of many thousand tons yearly.. For this purpose many vessels are employed. It is not often that a vessel can make more than one voyage a season, on account of the floating ice in the Northern waters. So it must necessarily take quite a fleet to get out sufficient cryolite to supply the great demand. As imported to this country, the mineral contains very few impurities. In fact, I believe there is a contract with the Danish government, and only a certain percentage of impurities are allowed. Each cargo is inspected before unloading, and if not up to the standard is rejected. When it is mined at a good depth, say 80 or 100 feet from the surface, it is very pure, whole cargoes containing but $\frac{1}{2}$ per cent. of impurities. In some of the mines, as they descend, the mineral becomes of a darker color. But a peculiarity about it is that on exposure, or when subjected to heat, the color is entirely dissipated, leaving the cryolite perfectly pure. The

impurities of cryolite generally consist of carbonate of iron and sulphides of copper, iron and lead, the latter in very pretty crystals. In some specimens traces of gold and several rare metals have been found, and quartz crystals occur often in connection with it.

Cryolite, chemically considered, is a double salt of aluminum and sodium with fluorine, the formula being $3NaF.AlF_3$ (Bloxam's chemistry). It can be artificially prepared by mixing calcined alumina and carbonate of soda with an excess of hydrofluoric acid.

Cryolite is not very hard, and can be easily reduced to a fine powder. In this condition, mixed with sand in the proportions of one part to three or four of sand, it has come into use in the manufacture of a beautiful white glass or porcelain ware, which is easily moulded and cut and is remarkable for its tenacity.

It could be used for many purposes if the advantages were sufficient to pay the difference in cost of importation.

As a source of soda, it is very profitable on account of the large percentage which it contains (about 35 per cent.) and the ease with which it is separated. The alumina present in it is no small item, and is now extensively used in the manufacture of the alum salts, which, as prepared from cryolite, are quite free from iron, generally containing but a trace. In the manufacture of the metal aluminum, cryolite has been used to a certain degree. But the process of isolation is not perfect, and I believe does not pay very well. Cryolite is insoluble in water, but when long boiled with lime, decomposition gradually takes place. It is fusible at a red heat, and on cooling forms a kind of glass which is slightly soluble in water. To thoroughly separate the mineral into its constituents it is first necessary to convert it into a soluble compound, which is readily accomplished, in a large way, by first bringing it to a very fine state of division by passing it through a crusher, then through several mills of different degrees of fineness, after which it is passed through sieves and bolting cloth, making it as fine as flour. It is then mixed with about an equal weight of lime, and calcined at a dull red heat in a reverberatory furnace for several hours, when it assumes a grayish appearance, being decomposed into insoluble fluoride of calcium and soluble aluminate of sodium, besides a small percentage of carbonate and hydrate of sodium. These are then separated from the fluoride of calcium by lixiviation with hot water.

On passing carbonic acid gas through the solution, the acid unites with the soda, and the alumina is precipitated, leaving carbonate of sodium in solution. Aluminate of sodium is now manufactured to a considerable extent, and is used in the place of soda and potash lye in the making of soaps, and is considered superior to either as a detergent. Fluoride of calcium, the by-product in the manufacture of soda from cryolite, is used in large quantities as a flux in the reduction of iron, gold and other metals. Taking everything into consideration, the process of making soda from cryolite has many advantages over the old process of making it from barilla, the ash of marine plants of southern Europe, or from kelp, the ash of sea weeds. It generally takes about 24 tons of sea weed to make one ton of barilla or kelp. The percentage of soda in barilla is 25 per cent., and in kelp not over 7 per cent. They are used only in the manufacture of iodine now. About the year 1804, Leblanc discovered and introduced the process of making soda from sea salt or chloride of sodium. It is rather complicated, and consists of heating the salt with sulphuric acid to form sulphate of sodium, roasting this with limestone to convert it into an impure carbonate, which is afterward washed and purified. The extensive soda manufactories of England all make it from salt by this or similar processes, producing bicarbonate often containing more impurities and a smaller percentage of carbonic acid than that produced in in this country from cryolite.

WASH-BLUE AND ITS ANALYSIS.

By H. G. Debrunner.

The different pigments sold as "wash-blue" chiefly consist of Prussian blue, or ferric ferro-cyanide, $(FeCy_6)_3Fe_4+18H_2O$; some of them, however, are prepared by immersing starch in cold solutions of indigo or anilin blue, by which process the pigment is absorbed. The latter kind is not very often met with; indeed, I think there is hardly any in our present market. The former kind of blue, however, on which I made a series of experiments, is found in almost every house, under varying names, often as a dry powder, put up in "patent boxes," sometimes, also, in solution.

Soluble Berlin blue, as the term is used in science, is not found in the market. I am referring to the blue precipitate formed on the addi-

tion of ferric sulphate or chloride to an excess of potassic ferrocyanide. The blue precipitate thus formed contains potassium, and is soluble in distilled water as soon as freed from adhering mother-liquor. Its formation is illustrated by the following equation:

$$\underset{\text{potass. ferrocyd.}}{2(K_4FeCy_6)} + \underset{\text{ferric chld.}}{Fe_2Cl_6} = \underset{\text{potass. chld.}}{6KCl} + \underset{\text{sol. blue.}}{2(FeCy_6K)Fe_2}$$

It is precipitated from its solution by shaking it with such indifferent pulverized substances as baric sulphate, and the same effect is produced by hard water and salt solutions, which qualities render it unfit for wash-blue.

The only allied compound which finds application as wash-blue is insoluble in water, and is obtained by the addition of a solution of potassic ferrocyanide, $K_4FeCy_6+3H_2O$, to an equal quantity of copperas, $FeSO_4+7H_2O$, also dissolved, and subsequent treatment of the white precipitate ($K_2Fe_5C_{12}N_{12}$) with a mixture of nitric and sulphuric acids. The product of this process is insoluble in water; it will, however, readily dissolve in solutions of ammonic tartrate, oxalic acid and potassic ferro-cyanide. Only the latter two solvents are of practical importance. Oxalic acid should be used in proportion of about $\frac{1}{6}$ of the weight of the dry blue in order to dissolve it entirely. Since oxalic acid is a poison it is doubtless preferable to substitute it by an equal amount of potassic ferrocyanide, thus obtaining a perfectly harmless product. For the manufacture of blue ink I should prefer the latter solvent already on account of its not corroding steel pens. The addition of the potassic ferrocyanide is done best when the previously formed and oxidized precipitate is sufficiently washed and of the consistency of a thick pulp (60 per cent. water). The mixture then is repeatedly passed through a mill, dried at about 120° F., and ground, when it is ready for sale. 100 lbs. of potassic ferrocyanide thus yield 80 lbs. of dry blue (almost exactly the theoretical amount), which require about 12 lbs. of $K_4FeCy_63H_2O$ to become soluble.

The pigment thus obtained forms a light, dark-blue powder, perfectly soluble in water; in lumps it possesses a handsome bronze tint. The color of the solution is a beautiful blue-violet, similar to the shade obtained by the action of ammoniacal vapors on the pure blue pigment. Sometimes, particularly if precipitated from very dilute "liquors," its solution shows fluorescence. It cannot be denied that the cost of this blue is higher than that of the one rendered soluble by oxalic acid.

The "patent" boxes, however, it is sold in contain such homœopathic quantities (average 60 grains, sold at ten cents) that the cost of package and label far surpasses that of the contents, still leaving a fair profit to the wholesale manufacturer.

The greater number of the "wash-blues" in the market contain oxalic acid, the detection of which is by no means so easy a matter as might be imagined. It is evident that on addition of calcic acetate not only calcic oxalate will precipitate, but also the Berlin blue, which thus becomes deprived of its solvent. The non-transparency of the solution (except on excessive dilution) neither facilitates a direct reaction. The method which I would propose, and which has given very satisfactory results, as well for the qualitative detection as for the estimation of oxalic acid, in this case is as follows:

About 10 grains of the blue to be tested are heated with caustic soda. The pigment thus becomes converted into sodic ferrocyanide and hydrated ferric oxide, while the oxalic acid will form sodic oxalate. The iron is filtered off and the filtrate acidified with dilute acetic acid. If oxalic acid is present, calcic oxalate at once will precipitate on addition of calcic acetate. As all the circumstances for the formation of ferric or a basic oxalate are present, it is advisable to dissolve the ferric precipitate in a few drops of hydrochloric acid; add sodic acetate and acetic acid to the *cold* solution, which, although assuming a red color, will not form a precipitate of basic acetate of iron except on boiling. On addition of calcic acetate the oxalic acid can be recognized by the precipitation of calcic oxalate, and it may be estimated in the usual manner if a quantitative determination should be desired. Although I have never found oxalic acid in this ferric precipitate, I would recommend not to omit testing for it.

As to the detection of potassic ferrocyanide in wash-blue, I have seen the following test applied, viz.: A few drops ot the concentrated blue solution are dropped on a piece of filtering-paper and allowed to spread. Owing to the capillarity, around the blue spot a colorless wet zone will form, which, although being hardly of the breadth of $\frac{1}{16}$th of an inch, will allow the detection of potassic ferrocyanide on adding to it a drop of a dilute solution of ferric chloride by means of a thin glass rod (formation of Berlin blue).

For confirmation I should recommend the following tests:

If potassic ferrocyanide is contained in a wash-blue, the aqueous extract of its residue on ignition will contain potassic cyanide (silver

reaction AgCy; boiling with a drop of ammonic sulphide and addition of a drop of ferric chloride Fe_2Cl_6—red color). As it takes a very low heat to decompose Berlin blue, said aqueous extract sometimes contains undecomposed potassic ferrocyanide. Test with ferric chloride.

Pure Berlin blue, ferric ferrocyanide, $(FeCy_6)Fe_4+18H_2O$, loses, at 212° F., 7·22 per cent. of water, a fact the manufacturers are well aware of, and therefore never allow the temperature of the "blue drying room" to exceed 100 to 120° F.

On ignition, depending on the intensity of heat, varying mixtures of ferric and magnetic oxide remain as residue. The loss on ignition, therefore, does not allow any conclusions on the quantity of blue present (for instance, in a mineral color), and an estimation of the ferric oxide, either by titration or weight-analysis will always be necessary. It is evident that this method would become incorrect if applied in the quantitative analysis of a blue rendered soluble by potassic ferrocyanide; it, however, can be successfully followed in the estimation of "oxalic acid blues." Wash-blue is hardly ever adulterated.

In order to ascertain the quantitative relation between the ferric oxide and the total quantity of blue I prepared a pure sample by the same process as done on a large scale, and dried it slowly at 80° F. It corresponded to the formula $2[(FeC_6N_6)_34Fe+18H_2O]=2368$, which will yield $7Fe_2O_3=1120$. 100 blue correspond to 47·290 per cent. oxide of iron.

1·00 gram of this pure ferrocyanide of iron lost on ignition 0·6058 = 60·58 per cent. of its weight. Actual residue = 0·3942 = 39·42 per cent. This residue then was dissolved, the Fe reprecipitated as $Fe_2O_3,3H_2O$, and finally weighed as Fe_2O_3 = 0·4750 = 47·50 per cent., nearly the theoretical amount.

From these data the quantity of pure blue can be calculated. I have, however, found that the pure "commercial blues" dried at a somewhat higher temperature, contain less than 18 H_2O, yielding 49·75 to 50 per cent. of Fe_2O_3, and consider it "practically correct" to multiply the quantity of Fe_2O_3 found, by two, in order to find the quantity of "commercial blue" present.

The numerous other blue pigments of this series, as, for instance, *Turnbull's blue* (ferrous ferricyanide, $(Fe_2C_{12}N_{12})Fe_3$), *chromate blue*, so called from potassic bichromate and sulphuric acid forming the oxidiz-

ing agents of the previous white precipitate, $K_2Fe_5C_{12}N_{12}$; *steel blue*, the product obtained on treatment of said white precipitate with hydrochloric acid, etc., are never used as wash-blue, and therefore out of the range of consideration. In this connection I desire to express my thanks to Mr. John F. Grossklaus, who kindly assisted me in these investigations.

Navarre, O., Jan. 15, 1877.

PREPARATION OF MEDICINAL PEARLS.

(*Translated from Hager's "Hand-book of Pharmaceutical Practice,"* 1876.)

The mass for forming the capsules consists of gelatin, gum Arabic, sugar and honey. This is rolled out into sheets of suitable thickness. One of these sheets is placed on top of an iron plate having a thickness of 0·6 centimetre, into which holes of a diameter of 1 centimetre have been bored. The gelatinous mass, while still pliant, sinks into these holes by its own gravity, forming a hollow hemisphere in each concavity. The ether or other medical preparation is then introduced, and the orifices are closed by another sheet of the gelatinous compound.

A second iron plate, furnished with holes corresponding exactly to those of the first, is now applied and securely fastened by suitable screws. The whole apparatus is now reversed in such a manner that the superior plate assumes the inferior position. Concavities will thus be formed in the second sheet of gelatin in the same manner as they previously were in the first. In order finally to separate the pearls, the entire arrangement is subjected to strong compression between iron plates in a powerful press. A. W. M.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Coloring Matter from Phenol.—If a mixture of 3 parts of sulphuric acid and 2 parts each of glycerin and phenol is kept for some time at a temperature of 120 to 130° C. (248 to 266° F.), it will gradually turn to a dark-red color, and, on being dissolved in water, hydrochloric acid will precipitate the coloring matter as a dark-brown powder, which is sparingly soluble in ether, and not crystallizable from its alcoholic or aqueous solution. Alkalies and alkaline salts color it handsomely red; baryta, alumina and lead oxide unite with it to form

lakes. When heated with anilin a red color is produced. It dyes silk and wool.

Thymol and pyrogallic acid yield coloring matters like phenol.—C. Reichl in *Ber. deutsch. Chem. Ges.*, 1876, p. 1429.

The secretion of salicylic acid is effected, according to one view, by combination with the salts of blood in the form of salicylates. Freser and Friedberger assume a combination with the albuminates of the blood, which, shortly before the excretion, is converted into salicylates. Binz believes in the first theory, and regards the salicylates of the blood as being decomposed by the carbonic acid generated in the tissues.

R. Fleischer regards the first view as the most correct one. Pure sodium salicylate is insoluble in ether, but on evaporation of the ether, after shaking it with a solution of the salt, reactions for salicylic acid may be obtained, though no residue is observed. This is due to the presence in the ether of minute traces of acetic acid. Neither carbonic nor acetic acid liberate salicylic acid from solutions of its salts, except in the presence of ether; on the contrary, salicylic acid liberates acetic acid from its salts, and, in contact with the so-called neutral sodium phosphate, forms salicylate and acid phosphate of sodium; however, on concentrating the solution containing these two salts, the neutral phosphate and free salicylic acid are again produced.—*Chem. Centralbl.*, 1876, No. 45.

Artificial oil of bitter almonds, prepared from toluol, by Wilhelmi, of Leipzig, has been examined, by E. Lippmann and Jos. Hawliczek, and compared with true oil of bitter almonds, which had been freed from hydrocyanic acid by distillation with milk of lime and ferrous sulphate; the artificial and natural oil were found to be identical, chemically as well as physically. They boiled between 178 and 180° C (352·4 and 356° F.); the benzyliden chloride, prepared from both, had the same boiling point (203–204°C.) and the same elementary composition ($C_7H_6Cl_2$); the benzoic acid prepared from both, by three different processes, had the fusing point (121° C.) and other properties of ordinary benzoic acid, and various ethers obtained from the two were identical. The specific gravity of the artificial oil at 0° C. was found to be 1·067, which agrees with the density (1·063) of the benzaldehyd from the natural oil, determined by H. Kopp.—*Ber. deutsch. Chem. Ges.*, 1876, p. 1461–1463.

Doctored Herbs.—A writer in the "Schweiz. Wochenschr. f. Phar.," 1876, No. 51, reports having met with some herbs, notably with melissa and mint, the odor of which suggested a fraudulent impregnation with volatile oil. To determine whether such was the case the following experiments were made: 30 grams each of the suspected herb, of an old herb sprinkled with a few drops of volatile oil and of a recently picked herb were macerated in a cool place with half a liter of water for 24 hours, then strained and the infusions mixed with a few grams of ether and set aside in a vessel covered with a well-fitting glass plate. After an hour the under side of the glass cover of the three liquids first showed the odor of ether, followed in the suspected and old herbs by the odor of the essential oil, which could not be perceived in the case of the fresh herb.

Boswellia serrata yields a gum resin, called *gugal* in India. It occurs in irregular lumps, to which the papery or thick inner bark sometimes adheres, greenish-yellow, occasionally with a red tinge; consistence waxy, becoming brittle; odor peculiar, balsamic, gradually diminished; taste bitter and balsamic; forms with water a greyish-white emulsion. Gugal is principally used as an incense, and has on this account been confounded with olibanum.—*Pharm. Jour. and Trans.*, Sept. 2, 1876.

Coto Barks.—Jul. Jobst has received a coto bark which was procured from the banks of the Mapiri river, in Bolivia, and showed some differences from the bark previously obtained under that name ("Am. Jour. Phar.," 1875, p. 541). By the process for cotoin (*ibid.*, 1876, p. 352), a compound crystallizing in yellow scales was obtained, which is called *paracotoin*, and differs from cotoin in not possessing a biting taste; in being less soluble in water, alcohol, ether, ammonia and potassa solution; in being not precipitated by lead acetate, and in yielding with nitric acid a yellow solution. Dr. Burkart, of Stuttgart, has found the new body quite as valuable a remedy in diarrhœa as cotoin; only somewhat larger doses were required. It is best given in the form of powder, triturated with sugar, 0·1 gram being used every three hours.—*Phar. Zeitung*, 1876, No. 98.

Constituents of Angelica Root.—Dr. C. Brimmer has examined some of the constituents of this root, and comes to the conclusion that Buchner's *angelicin*, when purified by repeated crystallizations, is tasteless and identical with Husemann's hydrocarotin; the *angelica*

sugar is cane sugar, and the *resin*, when added to fusing potassium hydrate, yielded resorcin, protocatechuic acid and volatile fatty acids, principally acetic acid.—*Liebig's Annal.*, vol. 180, p. 269–282.

Sulphate of Quinia, when exposed to the air, loses water of crystallization until its composition is $(C_{20}H_{24}N_2O_2)_2H_2SO_4+2H_2O$. It then retains 4·6 per cent. of water, which is entirely expelled at 100°C. The anhydrous quinia sulphate, when exposed to the air, rapidly absorbs again the whole amount of this water, acquiring the same composition as the air-dry salt.—*Phar. Jour. and Trans.*, Sept. 2, 1876.

Acetate of Morphia, when freshly prepared, is easily and completely soluble in water; but, according to Merck, there is a continual slow evolution of acetic acid, causing the salt to become incompletely soluble; it is further altered by long keeping, becoming yellow and even brown. The salt is soluble without coloration in cold, strong sulphuric acid only when recently made; but at the end of a few weeks it yields a faintly colored solution, although the salt may still be white. No loss of medicinal properties through the decomposition is experienced, unless an intense yellow color has been acquired.—*Phar. Jour. and Trans.*, 1876, p. 229.

Quinetum.—Prof. Th. Husemann warns against the use of the crude mixed alkaloids ("Am. Jour. Phar.," 1876, p. 134, and 1877, p. 28), until, by careful experiments, it should have been demonstrated that it possesses decided advantages over purified chinoidin. Quinetum, besides containing resinous substances and inorganic impurities, is largely composed of cinchonia, producing unpleasant symptoms, which last longer than from equal doses of quinia or quinidia, while at the same time the febrifuge properties are diminished.—*Phar. Handelsbl.*, Dec. 6, 1876.

Fermentation of Glycerin.—A. Fitz observed that glycerin is not fermentable under the influence of the fungi of alcoholic ferments (Mucor racemosus); but when sufficiently diluted with water (20 parts) and left in contact with schizomycetes and in the presence of calcium carbonate, it undergoes fermentation, normal butylic alcohol and butyric acid being produced, besides small quantities of ethylic alcohol and a volatile fatty acid (probably capronic acid); hydrogen and carbonic acid are given off during the fermentation.—*Ber. deutsch. Chem. Ges.*, 1876, 1348–1352.

Excipient for Pill Masses.—G. Welborn has presented a paper on this subject to the British Pharmaceutical Conference, and proposes a mucilage made from ½ oz. powdered tragacanth and 2½ oz. each of water and glycerin, adding 5 drops of oil of pimento. This tragacanth excipient will keep good for several years and smaller quantities of it are required than of several of the excipients directed in officinal pills. —*Phar. Jour. and Trans.*, Sept. 23, 1876.

Cement for Aquaria.—A mixture of equal parts of shellac and powdered pumice stone, used warm, will cement glass, wood and metal. Another serviceable cement is obtained by fusing flowers of sulphur and adding finely powdered pumice stone.—*Pol. Notizbl.*, 1876, 239.

The purification of sulphate of zinc is rapidly and conveniently effected by means of permanganate of zinc. Prof. Fr. Stolba dissolves the fine salt in 3 parts of boiling distilled water and adds some pure zinc white, diffused in water. To the boiling liquid a solution of permanganate of zinc is added, drop by drop, until a faint red color is produced. When the color ceases to disappear rapidly on the addition of a little zinc white, the oxidation and precipitation of the oxides of manganium and iron has been effected, and the boiling is then continued until the color of the permanganate finally disappears, or it is deoxidized by the careful addition of some solution of the impure zinc sulphate. A few drops of sulphuric acid are added to the filtered liquid to prevent the separation of basic salt, and the purified sulphate is crystallized in the usual way.

Prof. Stolba prepares the solution of *zinc permanganate* by dissolving one part of potassium permanganate in sufficient hot water, and adding, with continued stirring, one part of silicofluoride of zinc. On cooling the mixture artificially, potassium silicofluoride separates, and the solution of zinc permanganate is poured off.—*Zeitschr. Oester. Ap. Ver.*, p. 555.

THE CHEMICAL CONSTITUTION OF BLEACHING POWDER.

By C. Stahlschmidt.

The author has expressed the view that chloride of lime may be considered as a calcium hydrate, in which 1 atom of hydrogen is replaced by chlorine; and further, that in the formation of chloride of lime, calcium chloride and water are produced; also that on bring-

ing it in contact with water it splits up into calcium hypochlorite and hydrate:

$$(1).\ 3CaH_2O_2 + 4Cl = 2CaHClO_2 + CaCl_2 + 2H_2O.$$
$$(2).\ 2CaHClO_2 + \text{Water} = CaCl_2O_2 + CaH_2O_2.$$

Experiments led to verification of the results of Graham, Bolley, Tschigianjanz, Fricke and Reimer, that some calcium hydrates, dried at 100°, absorbed scarcely any chlorine, whereas others under the same conditions yielded good products. Dried over sulphuric acid, the limes absorbed chlorine readily. In the latter cases, however, it is considered that a small quantity of water is still present in the hydrate, which is a necessary condition for the absorption of the gas. 0·4 per cent. of water or more in the hydrate is sufficient, so that chloride of lime may be formed at 0°, but if the hydrate has been dried at 100° to 130°, it cannot be converted into chloride of lime, unless the latter undergoes a rise in temperature. In his experiments the author worked upon quite pure materials, and with scientific exactness. A low temperature was found to be unfavorable to the formation of chloride of lime, or at least to impede it. It was found difficult to account for the indisposition of certain limes to absorb chlorine gas. A calcium hydrate with a slight excess of free water gave a chloride of lime no stronger than when a dry hydrate was used, but the former, under favorable conditions, might be made to absorb more chlorine, and finally attain a strength indicated by 39 per cent. of available chlorine. It was also found that a quick-lime, which slaked with difficulty, is less to be recommended for chloride of lime manufacture than one which slakes quickly. A lime of the former description absorbed the chlorine much more slowly, and gave a chloride of lime of only 31 to 35 per cent.

The following formula represents the formation of chloride of lime as bearing out the experimental results obtained:

$$3CaH_2O_2 + 4Cl = 2CaHClO_2 + CaCl_2 + 2H_2O.$$

That water was liberated from perfectly dry calcium hydrate, on treatment with chlorine, was made manifest by the drops of water collected in the in-let tube. In certain cases a chloride of lime is obtained containing upwards of 40 per cent. of chlorine. Göpner, by passing the chlorine through warm water of 60° to 70°, obtained a chloride of lime of 40·2, and another of 42·84 per cent. The author accounts

for this as follows: In presence of moisture a portion of the compound $2CaHClO_2$ in the already formed chloride is decomposed into $CaCl_2O_2$ and CaH_2O_2, the latter in presence of more chlorine, then giving $CaHClO_2$. The following reaction may alse take place, $2CaH_2O_2 + 4Cl = CaCl_2O_2 + CaCl_2 + 2H_2O$, and when we have the two results, $2CaHClO_2 + CaCl_2 + 2H_2O$ and $CaCl_2O_2 + CaCl_2 + 2H_2O$, the strength of equal parts of such a mixture (chloride of lime) would be 43·5 per cent. actual chlorine; in the proportion of 5 : 1 = 40·5 per cent., and in that of 10 : 1 = 40·0 per cent. It is concluded that, with the help of the water liberated from the dry hydrate in its conversion into chloride of lime, together with that contained in, and carried along with the chlorine gas, the already described decompositions of the chloride of lime may take place, so that the amount of actual chlorine in the product will rise. This view is supported by the fact that in a manufactured sample of chloride of lime, prepared from calcium hydrate which contained about 8 per cent. of water in excess, besides the compound $CaClHO_2$, also calcium hypochlorite occurs in varying quantities. On suspending calcium hydrate in water, and passing a current of chlorine through the mixture, till alkalinity disappeared, and all the lime had dissolved, it was found that the following equation was exactly realized: $2CaH_2O_2 + 4Cl = CaCl_2O_2 + CaCl_2 + 2H_2O$. This was proved by estimating in equal volumes of the solution, first the actual chlorine, secondly the lime. Of course the most conclusive proof of the existence of calcium hypochlorite in the chloride of lime solutions, is that Kingzett has obtained crystals of calcium hypochlorite from such solutions by evaporation, in a vacuum over sulphuric acid, or by cooling a concentrated solution below 0°. J. Kolb has observed that carbonic acid decomposes chloride of lime, liberating hypochlorous acid and leaving calcium carbonate. The author has had a sample of chloride of lime, which was thus reduced from 25 per cent. to 7 per cent. actual chlorine, the amount of calcium carbonate having risen to over 40 per cent.

The workmen can distinguish the hypochlorous acid from the chlorine by the slower action which the former exerts upon the lungs, and by its sweetish taste.—*Jour. Chem. Soc.* [Lond.], Dec., 1876, from *Dingl. Polyt. J.*, ccxxi, 243–250.

ON GALICIAN OZOKERIT AND CERESIN.

BY DR. J. GRABOWSKY.

(*Read before the American Chemical Society, Oct.* 5, 1876.)

Ozokerit is found in Galicia (Austria) principally in Borislaw, near Drohobyez, and Dzwiniacz, near Stanistawow. Both places are situated at the northern foot of the Carpathian mountains; the formation is miocene, and of some importance on account of its petroleum springs. The production of "earth-wax" (ozokerit) was estimated to have amounted to about twenty million of kilograms in 1875, upwards of eighteen million of kilograms coming from Borislaw alone. According to F. v. Hauer, the largest crystals of salts, which are found in connection with the ozokerit, as well as the saline springs in the petroleum-bearing strata, prove that these latter belong to the zone of the calcareous neogene formation. They contain the fluid oil as well as the solid "earth-wax" partly in more or less regular beds, partly in fissures and pockets. The exploitation is effected by means of shafts and tunnels, the former being from 40 to 80 meters deep and about 1 meter square, the latter being generally quite short on account of the very primitive method of ventilation and the great amount of gases. The shafts generally pass, first, through 8 to 10 meters of gravel mixed with boulders, then through blue loam and plastic clay, which contains numerous layers of marl, slate and sandstone. In this clay, usually at a depth of from 40 to 50 metres, petroleum springs and ozokerit are found. This latter forms lumps or layers from 1 to 3 feet thick, these lumps sometimes weighing several hundred kilograms. This native ozokerit is transparent, of pure honey-yellow color, possessing the hardness of common beeswax. More frequently, however, ozokerit is found in thin layers and small pieces, which must be separated from the gangue; the smallest pieces are only obtained by a process of washing.

Besides pure, good "earth-wax," some varieties occur which are especially distinguished by hardness and color.

The best "earth-wax" should have a pure yellow or greenish color, and be easy to knead between the fingers; this, after having been tried (melted), yields a "prime" earth-wax, which is generally used for the manufacture of "ceresin." The poorer kinds are colored black, and either very soft (containing much petroleum) or too hard, resembling asphaltum, fusing at a high temperature. After trying,

these produce an "earth-wax" which is chiefly used for the manufacture of paraffin.

Occasionally there are found pieces of ozokerit, which is very compact, as hard as gypsum, fuses above 100° C., and is dichroitic (dark green in reflected and pure yellow in refracted light).

The composition of ozokerit is best expressed by the formula C_nH_{2n}. Very little is known about its formation. It appears to me to be very probable that it has to be considered as a product of the oxidation and condensation of petroleum hydrocarbons. Only lately we have seen that hydrocarbons, as, *e. g.*, naphthalene, can form by oxidation not products containing oxygen, but dinaphthil:

$$2C_{10}H_8+O=C_{20}H_{14}+H_2O.$$

By supposing a similar oxidation of hexan or octan, we obtain compounds of the formula C_nH_{2n}, which again may condense with hydrocarbons of the marsh-gas series, and thus give rise to the formation of very complicated hydrocarbons of high melting point, *e. g.*:

$$1. \ldots\ldots 2C_8H_{18}+O_2=C_{16}H_{32}+2H_2O.$$
$$2. \ldots\ldots C_{16}H_{32}+C_8H_{18}+O=C_{24}H_{48}+H_2O.$$

By this hypothesis the formation of petroleum may be reduced to an oxidation of marsh-gas, and thus the close connection between ozokerit, petroleum and coal be explained in the most simple manner.

As stated above, the crude ozokerit is separated from the gangue by melting, and worked into paraffin or ceresin. The trying is effected either by direct fire or by steam. In the former case the ozokerit is placed into iron kettles of about one and a half meter in diameter by one meter in height, melted, drawn off, and the residue boiled with water, when all the ozokerit will rise to the surface of the water. In the latter case the melting is done by steam in the same manner as with paraffin or stearin, and needs no further description. The tried ozokerit is clarified by allowing it to settle for several hours, and then poured into iron moulds. It is shipped in this form without any further packing, and in pieces of about fifty to sixty kilograms.

There are, principally, two kinds of commercial ozokerit, prime and second. Prime "wax" ought to be as free as possible from earthy impurities, and in small, transparent, greenish brown to yellow pieces; the lighter in color and the more transparent the better it is. "Second wax" is dark brown, almost apaque, occasionally containing a great deal of earthy impurities, and is generally much softer than the prime.

Both are used for the manufacture of either paraffin and illuminating oils or ceresin. The manufacture of paraffin from ozokerit is effected by distillation over direct fire, from iron retorts, with flat bottoms, containing from 700 to 1,000 kilograms. The products of the distillation are:

Benzin, ...	2 to 8 per cent.
Naphtha, . . .	15 " 20 "
Paraffin, ...	36 " 50 "
Heavy (lubricating) oils, .	15 " 20 "
Coke, ...	10 " 20 "

The paraffin is pressed, treated with sulphuric acid and caustic soda, filtered through paper and fine animal charcoal, and manufactured into candles. The naphtha is purified in the usual way, and the heavy oils are sometimes subjected to fractional distillation, but mostly shipped as such to Vienna.

The manufacture of ceresin consists of the removal of the impurities from the "earth wax" by the aid of sulphuric acid and animal charcoal; but only the best kinds of ozokerit are used. The different processes are kept secret, and are also protected by patents. In general, the ozokerit is melted with concentrated sulphuric acid and the residue from the manufacture of yellow prussiate, pressed, treated again with prussiate residue and filtered. 100 parts good prime "earth-wax" yield 60 to 70 parts white wax, which in its properties very closely resembles white beeswax and is called "ceresin." It is either further purified by repeated treatment with acid and prussiate residue, or colored with gamboge or alkanet, and thereby made to closely resemble common beeswax. In the manufacture of ceresin only sulphurous acid and press residues are obtained, the former of which escapes into the air, but might be utilized, thus reducing the cost considerably. The consumption of sulphuric acid in Borislaw alone is said to amount to one million kilograms a year. The prussiate residues are obtained from the lixiviation of the crude prussiate in Moravia.

The finely divided animal charcoal seems to be the active agent, since a fair ceresin may be obtained by simply treating commercial "earth-wax" with bone char and concentrated sulphuric acid.

Comparatively only a small quantity of earth-wax is worked in Galicia; it is shipped principally to England, Moravia and Vienna.

The ceresin is exported in large quantities to Russia, where it is sold as beeswax; for this purpose it is melted together with a little beeswax, in order to impart to it the characteristic odor. Good ceresin is hardly to be distinguished from beeswax; the best methods are the following:

1. Ceresin is not as easily kneaded between the fingers, and becomes brittle more readily than beeswax. This test is, however, doubtful, if the sample consists of a mixture of the two.

2. Ceresin is scarcely attacked by warm concentrated sulphuric acid, whereas beeswax is completely destroyed by it. By this test the quantities of beeswax and ceresin can be determined in a mixture of both.

In many cases ceresin can be employed in the place of beeswax. It it sold at from 32 to 40 dollars per 100 kilograms in Vienna, whereas the price of the commercial earth-wax varies from 10 to 12 dollars per 100 kilograms.

The whole exploitation of the ozokerit, on account of the want of enterprising men, is in the hands of the Jewish population. It is very imperfect, and necessarily requires many changes in the mining laws.—*Amer. Chem.*, Oct., 1876.

ON AN ARTIFICIAL SUBSTITUTE FOR BEESWAX.[1]

By Gustav Hell.

The author relates that a short time ago an article was offered for yellow beeswax, which, on account of the moderate price, sold largely, and which he has determined to be entirely factitious. The appearance of this false wax is almost identical with that of genuine beeswax. In color, brittleness, fracture and adhesiveness, the difference is very slight. On the outer surface the characteristic honey-like smell, although faint, was distinctly perceptible. The freshly-cut surface, however, has not the same lustre as in genuine wax, and the freshly-fractured surfaces give a marked pitchy odor. Melted at a gentle heat the smell of honey is lost, and the pitchy odor asserts itself in an unmistakable manner; at a stronger heat it becomes intense, and persists for a long time. Having ascertained in this simple manner that the article in question was one containing a considerable proportion of pitch, the melting point and specific gravity were determined in the usual way, as follows: A glass flask, with a wide mouth, was three-fourths filled with water, and a test tube containing small pieces of wax and a

[1] "Pharm. Post," July 1, 1876, p. 218.

thermometer was sunk to the centre of the flask, and the latter lightly closed. The contents of the flask were then slowly warmed by means of a spirit lamp. When about a third of the wax was melted, the mercury in the thermometer stood at 70° C. This temperature indicated, therefore, the melting point of the wax. For the determination of the specific gravity two similar pieces of wax were allowed to sink in diluted spirit of wine, contained in a beaker, and distilled water was added, little by little, and mixed well with the spirit until the pieces floated just beneath the surface of the fluid. The specific gravity of this fluid was then determined. This was 0·962, which was taken as the gravity of the wax under examination.

In the further examination 1 gram was warmed with 10 grams of chloroform in a small flask. The solution was clear and yellow, but soon became turbid ou cooling, and an almost transparent, colorless, serous mass separated, more particularly upon the walls of the flask. Afterwards 1 gram was dissolved in 15 grams of 70 per cent. alcohol by boiling, and allowed to cool. In the clear yellow-colored solution round and half-round colorless granules were deposited. These were recovered by filtration, dried in the air and weighed; six decigrams were thus obtained. The specific gravity of these granules was 0·910. The filtrate was evaporated at a gentle heat, and left as residue a brittle resin of a beautiful dark-yellow color, weighing about four decigrams. Further, one gram of the wax in raspings was boiled, and well shaken in a solution of 1·4 gram borax in 20 grams of distilled water. A colorless mass separated on the surface of the liquid in the vessel. The liquid was turbid, but on cooling was neither milky nor gelatinous; Japan wax was therefore not present. The same experiment was made with the granules free from resin. This time the fluid remained clear during boiling and when cooled. The granules united into a cake at the top of the fluid. A sample in fine shavings was then agitated with diluted ammonia solution; a portion of the residue above mentioned, free from resin, was also treated with ammonia. In both cases the fluid remained clear and transparent, and the samples unchanged, indicating the absence not only of stearin, but also of curcumin and olein. The granular body quite free from resin, which, according to the above tests, contained neither stearin nor Japan wax, was now tested for paraffin. It had a lustrous appearance and alabaster-like transparency, yielded between the fingers without adhering, and dissolved easily and

completely in oil of turpentine and benzin, but not at all in five parts of absolute alcohol.

The examination carried out and described as above should be clearly understood to set up a claim to be exact and exhaustive. It shows the object to be determined, viz., that this product bought and sold for beeswax was no other than a mixture of about 60 per cent. of paraffin and 40 per cent. of common resin, run into cakes, and thinly covered with genuine beeswax. The examination shows also that the specific gravity alone is not sufficient for the detection of adulteration in wax, and that a product perfectly corresponding in this respect with genuine wax may nevertheless be entirely factitious and useless.—*The Chem. and Drug.*, Lond., Nov. 15, 1876.

LABORATORY NOTES.

By T. A. Edison.

1. Hard rubber or vulcanite, placed for several weeks in nitrobenzol, becomes soft and pliable like leather, and easily broken.

2. The vapor of chloral hydrate is a solvent of cellulose. I have found the corks of bottles containing the crystals eaten away to the depth of a quarter of an inch, the cork being resolved into a black semi-liquid. Certain kinds of tissue paper are partially dissolved in time, if thrown in a bottle containing the crystals.

3. A very difficult substance to dissolve is gum copal. I have found that anilin oil dissolves it with great facility.

4. Hyposulphite of soda is apparently soluble to a considerable extent in spirit of turpentine. Large crystals of "hypo" melt down to a liquid after several weeks, and if the bottle be shaken, partially disappear. The turpentine smell nearly disappears.

5. The vapors of iodine, in the course of several months, will penetrate deeply into lumps of beeswax.

6. If to a solution of bisulphide of carbon there be added twice its bulk of potassic hydrate in sticks, and the bottle be well sealed, the whole will, in two months, become an intense reddish, syrupy liquid, with scarcely any free bisulphide of carbon.

7. Some substances in solution form crystals or deposits on the sides of the bottles containing them, generally above the water line. Among such solution in 100 cc. of rain water may be mentioned a 14-gram

solution of acetate of uranium, 8-gram do. of proto-acetate of copper, 5-gram do. of acetate of morphia, 10-gram do. of formate of copper, 20-gram do. of tannate of iron. These deposits invariably take place on that part of the bottle most *exposed to light*. This phenomenon may be due to heat, but deposits or films occur in some solutions *within the liquid* as well as above it—especially noticeable with tannate of iron, the film of which adheres strongly to glass.—*Amer. Chem.*, Oct., 1876.

Menlo Park, N. J., Nov. 10, 1876.

VARIETIES.

Ergot for Hypodermic Use.—At the last meeting of the American Pharmaceutical Association, Mr. D. Benjamin stated that a liquid preparation of ergot, prepared by the following formula, had been used with advantage by several physicians, among others by Profs. Agnew and Goodell, of the University of Pennsylvania: Two troyounces of powdered ergot are exhausted by 8 fluidounces of strong alcohol, the tincture is evaporated, at a low temperature, to 2 fluidounces; when cold, mixed with 6 fluidounces of water, filtered, again carefully evaporated to two fluidounces, and preserved by the addition of 3 grains of salicylic acid. Mr. Benjamin has, since then, evaporated the liquid to one fluidounce and added two grains of salicylic acid for preservation.

Ergot for Hypodermic Injection.—Having been requested to devise a suitable preparation of ergot for the above purpose, H. P. Madsen, in default of Dragendorff's sclerotic acid, dissolved the officinal extract of ergot in equal weight of diluted alcohol (0·890), filtered, after 3 day's repose, and evaporated to sp. gr. 1·25. The liquid is now accurately saturated with carbonate of sodium and is ready for use. (Extr. of ergot, "Ph. Dan.," is made by exhausting with water, evaporating to syrupy consistency, mixing with diluted alcohol [0·890], filtering and evaporating to extract consistency).—H. M. W. from *Ny Pharm. Tid.*, 1876, p. 372.

Gregory's Syphon Filter.—("Proceedings Am. Phar. Ass.," 1876, p. 56.) Mr. G. cautions against too strong suction, lest the filtering paper be broken. This can be prevented by first stretching a piece of not too fine muslin over the tube, and over the muslin tying the filtering paper. Be the suction ever so strong, the paper will be prevented, by the muslin, from being stretched to breaking.

HANS M. WILDER.

Diætheralysis of Legrip.—(*Ibid.*, p. 61.) This is nothing new, at least the writer cannot find any difference between Legrip's method and that of Pierlot ("Am. Jour. of Phar.," 1862 [xxxiv], p. 544.) HANS M. WILDER.

Examination of Nostrums.—The "Peninsular Journal" gives, from the analysis of Jos. J. Pierron, Ph C., the following as the approximate composition of some popular nostrums:

Perry Davis' Pain Killer.—In a bottle sold for a dollar: Spirit of camphor, about f℥ii; tinct. of capsicum, about f℥i; guaiac, ℥ss; alcohol, f℥iii; myrrh and color.

Radway's Ready Relief.—In a half-dollar bottle: Soap liniment, about f℥iss; tinct. of capsicum, f℥ss; water of ammonia, f℥ss; alcohol, f℥ss.

Flagg's Relief.—In a bottle sold for half a dollar: Oil of cloves, about f℥i; oil of sassafras, f℥ii; spirit of camphor, f℥iss.

Chamberlain's Relief.—In a bottle sold for thirty-five cents (approximately): Tinct. of capsicum, f℥i; spirit of camphor, f℥¾, guaiac, ℥¼; color tincture, to make two fluidounces.

Hamlin's Wizard Oil.—In a bottle sold for a dollar there are (in approximate proportion): Spirit of camphor, f℥i; spirit of ammonia, f℥ss; oil of sassafras, f℥ss; oil of cloves, f℥ii; chloroform, f℥ss; oil of turpentine, f℥ss; alcohol, to make about five fluidounces.

Kellogg's Red Drops.—A bottle, sold for half a dollar, contains (in approximate quantities): Spirit of camphor, f℥ii; spirit of origanum, f℥¼; oil of sassafras, f℥¼; oil of turpentine, f℥ss; color tincture, to make three and a fourth fluidounces.

Substitution of Bromide of Cadmium for Bromide of Ammonium.—Dr. G. A. Wheeler, of Castine, Me., reports the cases of two ladies, who were poisoned by taking some salt from a bottle which had the label of Wm. Conrad, Paris, with the designation, *bromure d'ammonium.* After several hours' suffering, both patients, having been treated with white of egg, sweet oil, milk, etc., gradually recovered. Prof. Carmichael, of Bowdoin College, established the identity of the salt with cadmium bromide. Evidently the wrong label had been attached to the bottle at the factory.—*Bost. Med. and Surg. Jour.*, Oct. 12, 1876.

On the Decomposition of Solution of Iodide of Potassium. By M. Bastaudier.—The author has experimented with a view of testing the conclusion to which other observers have come, that the decomposition noticed in a solution of iodide of potassium is due to solar light, and in no degree to the influence of the atmosphere. According to him, this conclusion is not sound. He finds that the solution in question is not affected by the solar rays when air is excluded; is scarcely affected by the same in an atmosphere of oxygen and nitrogen only, but is decomposed to varying extents in ordinary air containing traces of acids, particularly carbonic acid. This result may be due to the liberation of hydriodic acid.—*Chemist and Druggist* [Lond.], Dec. 15, 1876, from *Jour. de Pharm. et de Chim.*, Sept., 1876.

Oil of Aleuritis triloba. By Dr. C. Oxamendi.—The *Aleuritis triloba* is a large euphorbiaceous tree, growing between the tropics, and particularly in India, where it is called by the English *candle tree* or *candleberry.* The oil is known in Ceylon as *kekune.* According to Griffith, the fruits are employed as aphrodisiacs, being

taken in small quantity in the fresh state. M. Bouchardat attributes to the oil valuable purgative properties; the dose is 30 grams, or even (as M. Retano de Gresandy states) 60 grams. M. Oxamendi confirms these observations as regards the purgative properties of the oil, but is of opinion that 15 grams is a dose sufficiently large for an adult, and 8 grams for a child. The effects on the intestines are the same as those of castor oil. It is not at all disagreeable to take, and has a nutty taste. It acts in about three hours without producing pain or colic. M. Oxamendi thinks that the action is due to a special resin. He recommends the following mixture:

	Grams.
Oil of Aleuritis triloba,	15
Powdered gum arabic,	12
Water,	12
White sugar,	15

—*Ibid.*, from *Jour. de Thérap.*

Albuminate of Santonin and Sodium.—According to Pavesi, a combination of santonin and of bicarbonate of sodium with soluble albumen forms a valuable vermifuge. The preparation is made in the following manner: 1 part of santonin, 4 parts of sodium bicarbonate and 2 parts of dried soluble albumen are warmed with a sufficient quantity of water at 60° to 70° until all are dissolved, and then evaporated to dryness at a very gentle heat. The albuminate of santonin and sodium forms brilliant white scales, soluble in water. The mineral acids precipitate santonin and albumen, with disengagement of carbonic acid. The reasons for which Pavesi gives the preference to this combination over the use of santonin alone are the following: The after effects of santonin, among others, that of yellowness of vision, are entirely obviated. The preparation is not decomposed in the stomach, because the bicarbonate of sodium in the combination retains the santonin in solution, the coagulation of the albumen is prevented, gently purgative sodium salts are introduced into the body, and finally, by the disengagement of a small quantity of carbonic acid, an active digestion is produced.

The properties claimed for this preparation should be examined by more extended researches.—*Chemist and Druggist* [Lond.], Nov. 15, 1876, from *Jour. de Pharm. de Genève*, July 5, 1876.

Volumetric Estimation of Alcohol. By T. T. Monell.—If a cobalt salt be added to an alcoholic solution of sulpho-cyanide of ammonium, a deep blue coloration is produced which suddenly vanishes on dilution with water, and re-appears on further addition of alcohol. Given the same volume, spirit of a certain percentage always gives precisely the same intensity of color with a standard blue solution in whichever order alcohol or water may be added. It is possible in this way to determine quickly by a volumetric process even so little as one-fourth per cent. of alcohol in a mixture. A measured quantity of the dark blue standard fluid is placed in a cylinder, and a mixture to be tested is added, until the color is reduced to that of a strip of pale blue glass; the volume of this pale colored fluid will be the greater as the mixture is richer in alcohol. This volume, once determined, will always remain

the same, and the percentage noted on the cylinder may afterwards be read off without further trouble. The standard fluid is always prepared with the spirit of the same strength and compared with the same strip of blue glass. The nitrate of cobalt is the salt found most convenient for this purpose. Colored brandy may be tested directly; in this case the tint is not blue, however, but green. Two cylinders are therefore necessary, one for the test and one to give the desired tint in conjunction with the blue glass. The cobalt solution may be either neutral or slightly acid, but should contain as little water as possible.—*Chemist and Druggist* [Lond.], Dec. 15, 1876, from *Amer. Chemist.*

MINUTES OF THE PHARMACEUTICAL MEETING.

JANUARY 16th, 1877.

The meeting was called to order by the President, Dillwyn Parrish. In the absence of the Registrar, A. W. Miller was appointed to act in his place.

Prof. Maisch presented the 24th annual volume of the Proceedings of the American Pharmaceutical Association, which was accepted with the thanks of the College.

Prof. Remington presented on behalf of Jos. J. Brown, now in California, some very handsome specimens of Eucalyptus globulus, having fruits and flowers attached to them.

A. W. Miller read a paper on adulterations (see page 57), giving the method by which the so-called Oregon balsam of fir had been manufactured, a specimen of which was presented. Prof. Maisch expressed satisfaction in having the source of this article cleared up. He stated that his previous experiments had convinced him that it was a fictitious combination of rosin and turpentine, but that he had not been able to recognize the flavoring ingredient. Prof. Maisch remarked that years ago itinerant venders had sold either pure salicin or mixture of salicin and quinia in proportions adjusted to the price realized, in various sections of the United States, under the garb of pure sulphate of quinia. He also spoke of the occasional adulteration of balsam of copaiba with castor oil, which is not very readily recognized, both being soluble in alcohol. Prof. Wayne had suggested the use of petroleum benzin, as this dissolves copaiba quite readily, but castor oil very sparingly. This test is, however, fallacious, as mixtures of equal parts of castor oil and copaiba dissolve freely in benzin. A more reliable method is to distil off the essential oil, and then to examine the residue. Pure copaiba makes a transparent mixture with aqua ammoniæ, while castor oil will be indicated by a soapy appearance. The paper was then referred to the editor.

Prof. Maisch read a lengthy paper on the use of the metrical system in prescriptions (see page 49). He exhibited copies of the Greek and Mexican pharmacopœias; of the new appendix to the "Swiss Pharmacopœia;" of "Dorvault's l'Officine" and of the Pharmaceutical journals "Revista Pharmacia" and "La Emulacion," in all of which weights are employed, as indicated in the paper.

James T. Shinn desired to know what means were adopted in Europe in order to dispense with the use of graduated measures in prescriptions. Prof. Maisch informed him that a special scale, one beam of which is often furnished with a rider, is usually reserved for this purpose After the vial has been tared, the prescribed liquids are then weighed directly in it.

A communication from Hans M. Wilder was also read, advising a recalculation of the pharmacopœia quantities into parts by weight, and suggesting that it be left optional with physicians to prescribe either in grams alone or by grams and cubic centimeters, just so that they indicate it plain and legible. He called special attention to the necessity of great care in the marking of the decimal point, the position of which may often be a matter of life and death, as far as the patient is concerned. Prof. Maisch stated that the same subject will claim the attention of the New York College of Pharmacy this week. Dr. Pile expressed a fear that it would prove difficult for physicians to adjust their doses by weight, on account of the differences in the specific gravity of liquids. Prof. Maisch replied that practically only three classes of liquids deserved consideration in this connection, namely, water, syrups weighing one-third heavier, and oils weighing one-tenth less than water; with most tinctures and fluid extracts, if prescribed as if they were of the same specific gravity as water, the difference would hardly be greater than the increase in bulk by dissolving solids, which physicians have very generally overlooked, but in those cases, where great exactness is desired and the precise size of the patient's teaspoon or tablespoon is known, the difficulty can be overcome by the addition of an adjuvant to make up a designated quantity. In answer to an inquiry, Prof. Maisch stated that several American medical societies had recently advised their members to use the metric system in prescribing.

James T. Shinn thought that the looseness of physicians in the matter of doses justified the retention of the present system of measuring liquids as a matter of convenience Prof. Maisch regarded the appliances for weighing in pharmacies as productive of far more accurate results than the present means used by druggists for measuring. He considered the uniformity of the metric system all over the world as the most important argument for its introduction. Even in comparatively narrow glass tubes there is so much liability to error in reading off the space occupied by the liquid which is measured, that in analytical work a special indicator is made use of so as to reduce the apparent variation to its minimum. This error is enormously augmented in proportion as the diameter of the surface of the liquid increases. E. M. Boring alluded to another error due to capillary attraction in tubes of narrow diameter.

A. W. Miller suggested that physicians might write a formula for one single dose, leaving the adjustment of the diluent to the pharmacist, in order to make up the conventional teaspoon or tablespoonful dose. The physician could then readily prescribe any convenient number of doses by the usual subscription: *Misce tales doses no.* ——. All the much dreaded labor of calculation and adjustment would thus be thrown on the druggist, who has certainly more leisure to do it carefully and accurately in the seclusion of his prescription department than the physician at the bedside of the patient.

Prof. Remington referred to the action of the last committee on the revision of the "Pharmacopœia," who had received positive instructions to abolish all measures of capacity, but on account of the obstinacy of some of their members, retained the majority of them. He saw no possible way of evading the issue, and therefore advocated taking the step at once, and doing it completely, without resorting to any half-way measures. He thought it wrong to wait for physicians to make a beginning. Prof. Maisch enumerated the various nations who had adopted the metric system for use in medicine, showing that it was already in use on nearly the whole continent of Europe, in all of civilized America, excepting the United States and Canada, and in the empire of Japan. According to information obtained by him from the medical attachés of the Japanese Commission during the late Exposition, the entire system of medical and pharmaceutical instruction in Japan is modeled after the German method; they even use the same Latin terms and pronounce them in accordance with the usage prevalent in Germany, and use the French weights exclusively.

Prof. Remington exhibited a small copper still, invented by E. T. Prentiss, of this city, who calls it an alcohol reclaimer. It is intended chiefly for strengthening and purifying alcohol, for which purpose a column is connected with it containing a number of perforated diaphragms, through which the vapor is compelled to pass. Prof. Remington had tried the still, and had found that the strength of alcohol could be increased to a certain degree by inserting a thermometer and keeping the liquid continuously at a low temperature. The price of the still was stated to be $15.00. E. M. Boring expressed a fear that all the present stills, when used merely for recovering the alcohol, required too high a temperature and thus injured the product, for which reason he was in the habit of simply evaporating the alcohol without attempting to recover it. A. W. Miller suggested that the same still could be readily modified so as to dispense with the column whenever it was desirable to do so; a low temperature could then be maintained by the use of a water-bath.

Dillwyn Parrish presented Japanese persimmons, preserved in sugar, for inspection. They were of very large size, and resembled in appearance the sugared fruits sold by confectioners.

Prof. Remington presented some very valuable specimens donated to the College by the late Prof. Joseph Carson shortly before his decease. Some of the articles were specially intended for the Cabinet, having formerly been used by Prof. Carson in illustrating his lectures at the College. The specimens embrace genuine Sumatra camphor, from Dryobalanops camphora, obtained by Prof. Carson through a relative in the East; pure Burgundy pitch, nutmegs preserved in alcohol, Japanese camphor, Chinese calomel in the form of flat crystals, hog gum from Jamaica, Japanese tobacco, varieties of India opium from Malwa, Benares and Patna; also, a cake of Smyrna opium, well freighted with bullets. The most valuable acquisition of all consisted in a very beautiful Chinese pipe for smoking opium. The stem of the pipe is completely covered with real tortoise-shell, and an ivory mouthpiece is fitted to it. The pipe is furnished with four earthenware bowls, an alcohol lamp of peculiar construction, several boxes of extra choice opium and a number of curious instruments intended for cleaning the pipe. The process of smoking the

drug was illustrated by Prof. Remington. On motion, the Registrar was directed to acknowledge the donation, and to express the thanks of the College to Prof. Carson's family.

Prof. Remington called attention to the handsome case of specimens received from F. Crace Calvert & Co., of England, to be divided between the University of Pennsylvania and the Philadelphia College of Pharmacy. Owing to the lateness of the hour, the examination of the specimens was postponed to the next meeting, when additional donations from the Austrian, English, Dutch and Italian Departments of the Exposition will also be ready for inspection.

ADOLPH W. MILLER, Registrar *pro. tem.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The Massachusetts College of Pharmacy has met with a very serious loss by fire. Since the beginning of the present year the College had occupied the third floor of the Mayhew School Building, on Hawkins street, in Boston, which was erected in 1847, and was abandoned for school purposes in June last. The second floor was unoccupied, and the ground floor was fitted up for the ward-room of Ward 7. The lecture-room of the College was about 30x50 feet, and around it stood cases containing the specimens of drugs and chemicals, all of which were destroyed. A lecture was delivered on the evening of January 22d, and a fire was left in the two furnaces in the basement as was customary. The fire, which was discovered about 3 o'clock the next morning, began, it appears, by the hot-air pipes directly over the furnaces, and ran upwards to the front rooms of the second and third floors, and through the cold-air boxes placed between the two floors to the rear part of the building, where less damage was done.

The accommodations were given to the College by the city of Boston, the owner of the building. The total loss to the College is estimated at about $3,000, which is but partially covered by insurance.

We sincerely hope that our friends will not be dismayed by this sudden loss, but that they may succeed in making temporary arrangements for the present, so as to continue the current course to its close. The losses, though serious, we trust are not irreparable, and the hearty good will and the determined energy for which the Boston pharmacists and druggists are known, will overcome them.

The Boston Druggists' Association held its annual meeting and banquet on the afternoon and evening of January 24th, when the following officers were elected:

President, William J. Cutler, of the firm of Cutler Bros. & Co.; Vice Presidents, Dr. Thomas L. Jenks and Nathaniel J. Rust, of Rust Bros. & Bird; Secretary, William F. Horton, of Cheney, Myrick, Hobbs & Co.; Treasurer, S. A. D. Sheppard, of S. A. D. Sheppard & Co.

At the banquet the newly-elected President occupied the head of the table, and on either side of him were seated Mr. Theodore Metcalf, the retiring President, and Mr. Daniel Henchman, a gentleman between eighty and ninety years of age, who has been engaged in the trade longer than any other man in Boston, and is the oldest living druggist in the State. In 1802 he first got hold of the pestle and mortar, and in 1814 went into business where he is now located, at the corner of Chamber and Cambridge streets, no alteration having been made in the place during that period.

Alumni Association of the Philadelphia College of Pharmacy.—The stated monthly meeting was held January 4th, 1877, President Kennedy in the chair, 43 members present.

Thirty specimens of crude drugs, chemicals and pharmaceutical preparations were submitted for the examination of the students, and excited much interest, being, as a rule, recognized by the majority. They were donated to the Alpha Phi Society.

Dr. Miller stated that white lead was used as an adulteration for rubber used in the manufacture of nipples, tubing, etc., and suggested possible lead poisoning. He had heard it stated that as much as 80 per cent. was known to have been used.

Mr. Kennedy advised the use of a small quantity of Haematoxylon in making tincture of kino, as it prevented the subsequent gelatinization. Mr. Boring used alcohol as a menstruum, with a similar result.

It was stated that Miss Clara Marshall, a former student of the College, had recently been elected to the chair of Pharmacy in the Women's Medical College of this city—lecturing Wednesdays at 12 M., and Thursdays and Saturdays at 11 A.M.

WALLACE PROCTER, *Secretary.*

Cincinnati College of Pharmacy.—At the regular meeting, held January 10th, the following officers were elected to serve for the ensuing year: President, Dr. R. M. Byrnes; Vice President, Dr. T. L. A. Greve; Recording Secretary, A. W. Bain; Corresponding Secretary, Louis Schwab; Treasurer, Chas. Faust; Trustees, Dr. T. L. A. Greve, F. L. Eaton, H. H. Kœhnken, John Weyer.

The Society of the Apothecaries of Berlin held a meeting November 21st, 1876, Dr. Schacht in the chair. Mr. Schering called attention to the increasing demand of *hydrobromate of quinia* for subcutaneous injections, for which purpose its absolute freedom from barium bromide is necessary. The quinia salt is soluble in 50 parts of cold water; but a supersaturated solution which will keep for some time may be prepared by dissolving the salt in 5 parts of hot water, and adding gradually 10 to 12 parts of water.

He also spoke of *dialyzed salicylic acid*, which is entirely freed from uncrystallizable impurities by dialysis, and yields pure and stable compounds. *Salicylate of zinc*, made with such an acid, is readily obtained in handsome white crystals. *Salicylate of sodium*, in voluminous white crystalline scales, which, in contact with air, neither become moist or reddish or acquire the odor of carbolic acid; its solutions in water and alcohol are clear, neutral and remain unaltered if protected against dust.

Mr. Arnd spoke on the *examination of fixed and volatile oils* by means of Abbe's refractometer, whereby differences are detected which are scarcely observable by means of the polariscope, two or three drops of the liquid being required for the test. Artificial oil of mustard was found to have a refraction of 1·5275 and a dispersion of 15°, while the volatile oil obtained from the seed had a refraction of 1·5525 and a dispersion of 17°. For expressed oil of almonds the refraction was found to be 1·9705 and the dispersion 15·5°; for oil of poppy seed 1·9753 and 15°. The *refractometer*, which is easily handled, has been constructed by Prof. Abbe, of Jena.

Pharmaceutical Society of Great Britain.—At the Pharmaceutical meeting held December 6, a note by Samuel Elliott was read, suggesting a *glyceritum croci*, for which the following formula was given: Saffron 1 drachm, glycerin 9 fluidounces. Mix and macerate for seven days; pour off the bright liquor; press the remainder through calico into another vessel, and again strain it; mix the two liquors and make up the whole to 9 fluidounces with glycerin. Its odor is much stronger than that of syrup of saffron.

Mr. Greenish referred to the astonishing power of glycerin of retaining various substances in solution, which were not precipitated after a time as from tinctures and syrups. Mr. Greenish had made a preparation of saffron in glycerin some 18 months ago which had kept uncommonly well.

For the preparation of *Hydrargyrum cum cretâ*, Mr. A. Bottle proposed a deviation from the "Pharmacopœia" process to the extent of substituting for the slow process of trituration in a mortar active agitation in a wide-mouth glass bottle, by which means the B. P. quantity (3 oz.) may be prepared and the metal minutely subdivided, with an expenditure of very little, if any, more time and labor than is required to be devoted to the preparation of a tincture. (Essentially the same process was suggested by W. H. Hewson, of Augusta, Ga., and published by Dr. E. J. Coxe, of New Orleans, in "Amer. Jour. Phar.," 1850, p. 317; see also a paper by W. W. Stoddart in "Pharmac. Jour. and Transact.," 1856, January 1).

Mr. C. L. Betty read a paper on *Oleate of bismuth*, stating that one part of oxide of bismuth is ground very fine and four parts of oleic acid are gradually incorporated with it. The mixture being placed in a suitable vessel, is subjected to a temperature of nearly its boiling point, then allowed to digest, with frequent agitation, at a temperature of about 60° during four days, or until it solidifies. The result is pharmaceutically, a plaster, which melts readily in contact with the skin, is bland to excoriated surfaces and penetrating by its limpidity. Further experiments will be necessary to prove the most reliable mode of its manufacture, as under apparently similar conditions results have not hitherto been uniform.

Mr. John Williams read a paper *on some reactions of the glycerol of nitrate of bismuth* (see "Amer. Jour. Phar.," 1877, p. 23). A solution of 20 per cent. of crystallized nitrate of bismuth, in glycerin, may be made, and is best effected in the cold; if much heat is employed the glycerol, when diluted with water, will make a milky solution, at any rate after a few hours. The property of bearing dilution with water, without producing a turbid solution, appears to diminish by keeping.

The diluted solution does not bear boiling, but, when so treated, deposits a basic salt, not afterwards soluble in water. The most interesting reaction is that caustic potassa or soda, added to the solution, diluted with water, causes a white precipitate, which is perfectly soluble in the alkali, but not in ammonia, the solution being miscible with water in all proportions, but yields a white precipitate with alcohol, which is not again soluble in water; by boiling a somewhat colored precipitate is obtained. Glycerin appears to play a part somewhat similar to that taken by citric acid in the liquor of the "British Pharmacopœia," or to tartaric acid, and probably other organic acids which will afford solutions with bismuth.

Mr. W. Martindale read a paper on *crystallized hyoscyamia*, in which it is stated that the apparently amorphous hyoscyamia of the London market is, in reality, minutely crystalline; he also gives Thibaut's process for obtaining the alkaloid crystallized (see "Proceedings Amer. Phar. Ass.," 1876, p. 354), and mentions some observations affirming the prolonged action of the alkaloid on the pupil.

Mr. A. W. Gerrard reported on eight samples of *glycerin*, one of which contained lead and butyric acid, and of the remaining seven four might be termed good, while the other three upon being burnt gave evidence sufficient to warrant him in characterizing them as very impure and unfit for medicine or domestic use.

Mr. Gerrard also reported of a *crystalline deposit from tincture of galls*, which he found to answer to the description given in "Watt's Dictionary" of the characters of *ellagic acid*.

Mr. J. C. Thresh read a note on *Capsaicin*, the active principle of Cayenne pepper, which he purified by dissolving in potassa solution, precipitating by carbonic acid, and dissolving the washed and dried precipitate in hot petroleum, from which it crystallized after several days. The crystals were dissolved in alcohol, the solution diluted with water and spontaneously evaporated until crystals were obtained, which, analyzed by Dr. Buri, of Strassburg, gave results agreeing with the empirical formula $C_9H_{14}O_2$.

EDITORIAL DEPARTMENT.

Conversion of Apothecaries' into Gram Weights.—Most of our readers are aware that within a few years the metric system of weights and measures has been introduced in many of the European countries. In medicine and pharmacy the change had to be effected gradually, principally on account of the older practitioners, who had become so habituated to the use of the old apothecaries' weights, that, for them, it was difficult to change suddenly to the new system. The burden of the labor was, therefore, in Germany, thrown upon the pharmacist, and, by a decree of the Minister of Ecclesiastic, Educational and Medical Affairs, bearing date of August 29, 1867, it was ordered that from and after the first day of January following every prescription sent to a pharmacy had to be prepared by the use of the metric weights, while the physician was allowed to prescribe either by the old or new system. A table, a copy of which is now before us, was authoritatively published at the same time, according to which the pharmacist was required to con-

vert the grains and ounces into grams, and *indicate these values upon the prescription*, so that, upon repetition, it could always be compounded alike. It seems to us that by a concerted action between the national medical and pharmaceutical associations a similar arrangement might be made, and, after agreeing upon a table of values, from a certain fixed date, apothecaries might be required to dispense all prescriptions by the metric weight only, without regard to the values indicated in the prescription. By following such a course the older physicians would gradually accustom themselves to the change, and, after a while, prescribe as readily by metric weights alone as they now use troy weights and wine measure. At the present time, and more particularly since the publication of the German "Pharmacopœia," in 1872, we have been informed that physicians, in Germany, may be said to prescribe solely in the metric system, the younger members of the medical profession having been educated in it, and those previously in practice having gradually acquired the knowledge and habit of prescribing by grams.

The table, as promulgated in Prussia, is not applicable to the weights used in this country, since the apothecaries' pound in that country equalled only 350·761 grams, while the troy pound weighs 373·202 grams, or, in other words, one troy ounce is equal to 510·68 (instead of 480) Prussian grains. In the few extracts which we give from this table our main object is to show that the rounding off of the values, by conversion into another system of weights, has not been considered to be productive of such serious results as has been suggested probable in this country, by the adoption of a similar course.

The fractions of a grain and its multiples, up to 15 grains, were calculated by taking the weight of the grain to be = ·06 grams, except that the following weights were rounded off as indicated gr. viii=·5; gr. ix=·55, and grs. xiv=·85. Of the higher values we select the following:

Gr. xvi=1·0; ℈i=1·25; ʒss=2·0; ℈ii=2·5; gr. xlviii=3·0; ℈iiss=3·12; ʒi=3·75; gr. lxxii=4·5; ʒiss=5·57; ℈v=6·25; ʒiiss=9·5; ʒiii=11·0, etc., the remaining values being estimated, as nearly as convenient, by taking the value of the scruple and drachm as stated, the ounce and its multiples being valued at the rate of 30 grams.

If it is remembered that the weight of a fluidounce of water of apothecaries' measure, at 15° C., very nearly equals (within 3·5 grains) one ounce of apothecaries' weight, as formerly used in Prussia, it will be evident that the Prussian *weights*, as indicated in the official table referred to above, will be almost the absolute equivalents for the corresponding measures of water, as employed in the United States, and upon this basis we have calculated the following table, giving all values in the approximate gram values. The table, it may be premised, follows that given by our "Pharmacopœia," and for the liquids three standards have been taken, namely, waters, fluid extracts and tinctures prepared with diluted alcohol, all having approximately the density of water; liquids lighter than water, spec. gr. ·85 to ·95 and including the spirits, tinctures made with alcohol, fixed and volatile oils; and liquids heavier than water, spec. gr. 1·25 to 1·32, including glycerin and the syrups. The few liquids, like ether and chloroform, varying to some extent from the densities here given, are so rarely prescribed as an addition to mixtures that it is believed that the table here given will, practically, in all cases serve the purpose as a

Table for converting Apothecaries' Weights and Measures into Gram Weights.

Troy Weight.	Grams.	Apothecaries' Measures.	Grams for Liquids: Lighter than Water.	Grams for Liquids: Spec. Grav. of Water.	Grams for Liquids: Heavier than Water.
Grain 1/16	·004	Minim 1	·055	·06	·08
1/12	·005	2	·10	.12	·15
1/10	·006	3	·16	·18	·24
1/8	·008	4	·22	·24	·32
1/6	·010	5	·28	·3	·40
1/4	·016	6	·32	·36	·48
1/3	·02	7	·38	·42	·55
1/2	·03	8	·45	·5	·65
3/4	·05	9	·50	·55	·73
1	·07	10	·55	·6	·80
2	·13	12	·65	·72	·96
3	·20	14	·76	·85	1·12
4	·26	15	·80	·9	1·20
5	·32	16	·90	1·0	1·32
6	·39	20	1·12	1·25	1·60
7	·45	25	1·40	1·55	2·00
8	·52	30	1·70	1·90	2·50
9	·59	35	2·00	2·20	2·90
10 (℈ss)	·65	40	2·25	2·50	3·30
12	·78	48	2·70	3·0	4·00
14	·90	50	2·80	3·12	4·15
15	1·00	60 (f ʒi)	3 40	3·75	5·00
16	1·05	65	3·60	4·0	5·30
18	1·18	72	4·05	4·5	6·00
20 (℈i)	1·3	80	4·50	5·0	6·65
24	1·5	90 (f ʒiss)	5·10	5·6	7·50
30 (ʒss)	1·95	96	5·40	6·0	8·00
32	2·1	100	5·60	6·25	8 30
36	2·3	120 (f ʒii)	6·75	7·5	10·00
40 (℈ii)	2·6	150 (f ʒiiss)	8·50	9·5	12·50
45	3·0	160	9·00	10·0	13·30
50 (℈iiss)	3·2	180 (f ʒiii)	10·10	11 25	15·00
60 (ʒi)	3·9	210 (f ʒiiiss)	11 80	13·0	17·50
70	4·55	240 (f ʒiv)	13·50	15·0	20·00
80 (℈iv)	5·2	f ʒv	16·90	18·75	25·00
90 (ʒiss)	5·9	f ʒvss	18·60	20·75	27·50
100 (℈v)	6·5	f ʒvi	20·25	22·5	30·00
110 (℈vss)	7·1	f ʒvii	23·60	26 25	35·00
120 (ʒii)	7 80	f ʒviii (f ℥i)	27·00	30·0	40·00
150 (ʒiiss)	9·75	f ʒix	30·40	33·75	45·00
180 (ʒiii)	11·65	f ʒx	33·75	37·5	50·00
240 (℥ss)	15·5	f ʒxii (f ℥iss)	40·50	45·0	60·00
300 (ʒv)	19·4	f ʒxiv	47·25	52 5	70·00
360 (ʒvi)	23·3	f ℥ii	54·00	60 0	80·00
420 ʒvii)	27·2	f ℥iiss	67·50	75·0	100·00
480 (℥i)	31·1	f ℥iii	81·00	90·0	120·00
℥ii	62·2	f ℥iiiss	94·50	105·0	140·00
℥iv	124·4	f ℥iv	108·00	120·0	160·00

Minims and Drops.—At the present time, when the introduction of the metric system of weights and measures is so widely discussed in the United States, it becomes of importance to guard against erroneous statements gaining a foothold, which might prejudice the inexperienced against a system which, after its successful introduction, promises to be of such great advantage. It appears to have escaped general notice that the two tables of the "U. S. Pharmacopœia" giving the relation of the old and metric weights differ, though slightly, in the value of the gram, which difference, however, becomes apparent only for the values of one ounce and over, amounting for 12 troyounces to less than 4 centigrams, quite insignificant in its practical bearing. Different values are again given in a paper, the original of which we have not seen, but which we find copied in the "Virginia Medical Monthly" for December. The paper, which is entitled "Practical Illustration of the Metric System," was taken from the "Medical Register for New England," and has for its author Francis H. Brown, M.D., assisted by Dr. Robt. Amory, of Brookline, and Prof. G. F. H. Markoe, of Roxbury. The most conflicting statements are given as to the relative value of the different weights and measures, as, for instance, the gram is stated in two contiguous places to be equal to 15·4323 and to 15·4349 grains. This difference, however, does not vary much from the difference in the "Pharmacopœia" tables, and is practically of no account. It is different, however, with other errors, which are by far too serious, though quite inconsistent, so that they appear to demand some notice here by placing two statements side-by-side:

f℥i=3·69 cubic centimeters;—for water f℥i=60♏ or 3 grams.

Since a cubic centimeter of water at its greatest density (4°C.) weighs 1 gram, the incorrectness of the above statement is quite apparent, even if the different gravity of water at the medium temperature (15°C.) is not neglected.

But when the statement is made that there is no relation between the density of a fluid and the weight of a minim, it is so clearly incorrect that it should need no refutation. A table given with the paper makes the bold statement that 20 minims of chloroform weigh only ·370 gram, or about one-third of the asserted weight of water, the latter being in reality only about three-fifth the weight of the former liquid, though not as given in the table.

It was found that the table, together with several sentences referring to it, have been taken from Dorvault's "l'Officine" (edit. 1872, p. 190), the translator having made the slight (?) mistake of translating *drop* (goutte) by *minim*. Dorvault describes several dropping glasses, and then states that "the apparatus is considered adjusted if, at 15°C., 20 *drops* of distilled water weigh 1 gram, at least within 5 centigrams." The following is the approximate weight of 20 *drops* of different liquids at a temperature near 15°C. (We give only a few from the lengthy table):

Syrup (35°B.),	1·111 grams.	Oil of peppermint,	·400 grams.
Ammonia (23°B),	·909 "	Oil of turpentine,	·385 "
Glycerin,	·837 "	Chloroform,	·370 "
Sulphuric acid (sp. gr. 1·84),	·700 "	Absolute alcohol,	·311 "
Croton oil,	·410 "	Sulphuric ether,	·263 "

An inspection of this table shows that there exists no relation between *the weight of a drop of a liquid and its density*."

We have similar tables enough of this so-called approximate measure by drops. A table giving the relation of the weight and measure of the drops of different liquids was prepared nearly fifty years ago by the late E. Durand, and published in the first volume of this journal (see also Griffith's "Formulary" (3d edit., p. 29). Those who desire to be informed of the different size of drops are referred to the tables in "Parrish's Pharmacy," 4th edit., p.p. 79, 80, where it will also be found that a difference of from 30 to 100 per cent. in the number of drops for the same measure is by no means uncommon, as obtained with the same liquid under different conditions.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the American Pharmaceutical Association at the Twenty-fourth Annual Meeting, held in Philadelphia, Pa., September, 1876. Also, the Constitution and By Laws and Roll of Members. Philadelphia: Sherman & Co., Printers, 1877. 8vo, pp. 909. Price, cloth, $7.50.

With the view of keeping the size of the volume within convenient limits, the Executive Committee has adopted a smaller type than had heretofore been used; but, notwithstanding this, the volume before us exceeds by ten pages the preceding issue.

As usual, a considerable portion of the book—392 pages—is occupied by the excellent report of Prof. Diehl on the Progress of Pharmacy, giving, in a condensed form, the results of the investigations and observations in pharmacy and the collateral sciences during the year closing with June 30th, 1876; the following 48 pages being the reports of the various committees, and the next 120 pages the papers read at the last meeting, and of most of which we have given a brief abstract in our October number. A list of books and pamphlets on pharmaceutical subjects, published during the year, has been prepared by Prof. Diehl, and is followed by the minutes and discussions, which, with the President's address, occupy 142 pages. Nearly as voluminous is the report of the Committee on the Centennial Exhibition, which gives a pretty complete list of the articles having special pharmaceutical interest which were exhibited at Fairmount Park; the last 160 pages being the list of exchanges, Constitution and By-Laws, roll of members and index, an alphabetical list of members being printed for the first time with this volume.

A very excellent likeness, printed from a steel engraving, of the late John Milhau; a well-executed lithographic plate of 13 vesicating beetles, nearly all indigenous to this continent; and very correct plates of Eriodyction Californicum, the new remedy for pectoral complaints, and of Rheum officinale, one of the sources of Chinese rhubarb, embellish the volume, besides 50 wood-cuts, in illustration of apparatus, drugs, chemicals, etc.

Taking everything together, the present volume is very creditable to the Association, and forms not only the largest and handsomest, but, we believe, likewise one of the most useful, when compared with its predecessors. The complete and well-

arranged and digested report on the progress of pharmacy, giving an annual synopsis of the pharmaceutical literature of the civilized world, is alone worth the whole amount of the annual dues, and all pharmacists and druggists who take an interest in the business of their choice, should connect themselves with this Association, which already has its members in 38 States and Territories of the Union, in Canada and some Central American States and West Indian Islands.

The volume will be mailed by the Permanent Secretary, John M. Maisch, on receipt of the price.

The Aromatic Group in the Chemistry of Plants. By Albert B. Prescott, F. C. S., Professor of Organic Chemistry in the University of Michigan. 8vo, pp. 23.

An interesting review of this important group of chemical compounds, reprinted from the "Proceedings of the Ann Arbor Scientific Association for 1875–76."

Boston Society of Civil Engineers. Report of Standing Committee on the Metric System of Weights and Measures. Boston, December, 1876. 8vo, pp. 12.

The society mentioned in the title has been very active in promoting the adoption of the metric system in this country, and has been in correspondence with other societies, boards of trade, manufacturers, etc., who would be affected by the proposed change. The report before us gives not only the favorable but also the unfavorable action and views of the parties named. We learn, also, that Sweden has adopted the metric system, its obligatory use to date from 1889, in order to avoid actual compulsion and to prepare all technical books in the new system. Russia is likewise moving in the same directions.

Regarding its practical introduction in this country, the committee conclude their report with the following recommendation:

"After advising so many other people to use the metric weights and measures, we think it would be a graceful thing for the members of this society to do something themselves towards actually adopting them. We think that the place to begin is in writing scales on plans. We recommend, therefore, that upon every plan that has its scale shown by a graduated line, indicating feet, miles, etc., a second line should be drawn as a scale of meters. This requires very little additional labor, does not injure the plan for present use and may enhance its future value, shows what is now the lawful standard of the United States and how long the meter is as compared with the foot, and it gives the draughtsman his first lesson as to the difficulties that lie in the way of the metric system. This practice can perfectly well be adopted by a very few persons, or even by a single individual, unsuppoted by the rest of the community."

Medicinal Plants; being Descriptions with Original Figures of the Principal Plants employed in Medicine, and an Account of their Properties and Uses. By Robt. Bentley, F. L. S., etc., and Henry Trimen, M. B., F. L. S. Philadelphia: Lindsay & Blakiston. Price, per part, $2.

Parts 13, 14 and 15 of this valuable work contain the colored plates and descriptive accounts of the following plants: Aconitum napellus, Tenospora cordifolia (an East Indian tonic, antiperiodic and diuretic), Mucuna pruriens, Inula helenium, Anacyclus pyrethrum, Artemisia pauciflora (yielding santonica), Strychnos nux-

vomica, Delphinium staphisagria, Potentilla tormentilla, Ecbalium elaterium, Convolvulus scammonia, Lavandula vera, Nepeta cataria, Marrubium vulgare, Erythroxylon coca, Cytisus scoparius, Prunus laurocerasus, Eucalyptus globulus, Cephaelis ipecacuanha, Rosmarinus officinalis and Laurus nobilis. As in the preceding numbers, the illustrations are superbly executed, the text is clear and comprehensive, and not the least important feature is the copious references to the literature on the various subjects in the English language.

OBITUARY.

Professor Joseph Carson, M.D., died in Philadelphia December 30, at the age of 68 years. He was elected to the chair of Materia Medica in the Philadelphia College of Pharmacy in 1836, and held that position until 1850, when he accepted the professorship of Materia Medica in the University of Pennsylvania, from which he retired in the spring of last year, in consequence of impaired health. The deceased had been editor of the "American Journal of Pharmacy" from November, 1836, until July, 1850, during a portion of which time he was assisted by Prof. Robert Bridges and afterwards by the late Prof. Wm. Procter as Associate Editors.

He took an active part in the revision of several editions of the "United States Pharmacopœia," and was honored with the position of President of the last decennial convention for its revision, which assembled in Washington in 1870. He was an active member of various scientific societies, in several of which he served as officer.

Dr. Carson contributed a number of valuable papers on subjects of the materia medica to this journal, most of which appeared during his occupancy of the editorial chair; and in 1847 he published a valuable work, entitled "Illustrations of Medical Botany," which was embellished with 100 handsomely illustrated lithographic plates.

He was a man of great mental and social qualities, and a successful teacher of his favorite branch of science.

Charles W. Badger died in Newark, N. J., after a brief illness, January 17th. He had been for many years engaged in the drug business in that city, and took a prominent and active part in the organization and objects of the local pharmaceutical associations of his State. He was a member—and the first and thus far the *only* life member under the present by-laws of the American Pharmaceutical Association. As a man of the highest integrity, sound judgment and good business habits, he was highly respected and honored with various positions of public trust; as a mark of respect, the pharmacists and druggists of Newark closed their places af business during his funeral on Saturday, January 20.

Henry A. Hughes, the oldest member of the American Pharmaceutical Association in the State of Kentucky, died in Louisville Nov. 21 last, aged 55½ years. He was born and raised in Paris, Bourbon county, Ky., and commenced business in Louisville in 1847.

THE AMERICAN
JOURNAL OF PHARMACY.

MARCH, 1877.

COLORED GLASSWARE.

By Hans M. Wilder.

Amber.—Mr. Rother ("Pharmacist," February, p. 43) furnishes a good illustration of the usefulness of amber-colored bottles in protecting the contents against the action of the chemical rays. Of a batch of tincture of kino, a portion was put in a brown bottle, and was found to be still in a good condition while the contents of the shelf bottle were entirely gelatinized. Since most preparations are sensitive to light (especially tinctures, essential oils, some of the powdered drugs and a few chemicals), amber-colored bottles should, by right, constitute the bulk of shelf-furniture. Sir John Herschel's observation, that the vegetable colors are destroyed by rays of the complementary color, will form no objection, since the complementary color of yellow is purple, and few articles possess that color.

Blue would be the right color for bottles containing "externals" or "poisons" (f. inst. aqua ammoniæ, acid. oxalic.)

White for all the remainder.

For the use of customers (prescriptions and counter sale): *Amber* only for solutions of nitrate of silver (as mentioned by Prof. Maisch, in the February number, not necessary in itself, but to serve as a distinction from other colorless preparations); *Blue*, for "externals;" *White*, for the remainder. But what have we to use for poisons?

The usual "knobbed" blue bottle is good enough, but we cannot prevent people from using the cleaned empty poison bottles for other purposes (f. inst. castor oil, sweet nitre, laudanum, etc.), and as for exchanging such bottles for white ones (that is, unobjectionable ones) every practical druggist knows that it is generally well-nigh impossible to induce people to submit to. Some invention is wanted which can be applied to bottles containing poisons, so as to serve as a distinguishing

and attention-calling mark, but which can be removed when said bottles have to serve for other purposes.

Mr. Bakes' suggestion of sand-bordered labels is a step in the right direction, but we want something more durable than pasted paper.

TINCTURE OF CATECHU.

By Louis Genois.

Some difficulty being experienced almost daily by pharmacists in preparing the above tincture so that it will not gelatinize, the appended modification of the official formula is hereby offered :

Take of	Catechu free from dirt, etc., and in small pieces,	3 troyounces ;
	Cinnamon, in moderately coarse powder, .	2 troyounces ;
	Water,	
	Alcohol, of each, . .	sufficient quantity.

Digest the catechu in 1 pint of water at a temperature of about 100° F., until reduced to a thin cream-like consistence ; let cool, add a pint of alcohol, let stand for twelve hours, filter ; then, with the filtrate, percolate the cinnamon, previously mixed with an equal bulk of clean sand, and moderately packed in a conical glass percolator, and when the menstruum has just disappeared from the surface, pour on sufficient diluted alcohol to make the product measure two pints. Prepared in this way, tincture of catechu is very clear, of a rich dark color, and will not deposit insoluble matter nor gelatinize inside of a year at least.

New Orleans, January 18th, 1877.

GLYCERITE OF NITRATE OF BISMUTH.

By W. W. Moorhead.

(*Read at the Meeting of the Alumni Association, Feb.* 1, 1877.)

Glycerol of nitrate of bismuth, which was the subject of an article in the January number of the "American Journal of Pharmacy," written by B. Squire, M. B., struck me as something which druggists, as well as physicians, have long wanted, and which is destined to become one of our most valuable and prominent preparations. I prepared a portion of the glycerite, using two troyounces of nitrate of bismuth, and a sufficient quantity of glycerin to make eight fluidounces.

I would suggest to the Committee on Revision of the "U. S. Pharmacopœia," that it would be much more convenient for physicians and druggists to have all the glycerites, with the exception of the glycerite of tar, made of this definite strength, instead of the present plan of ordering two troyounces of the base and one-half pint of glycerin, making a solution of which no one can know the exact strength without experimenting to see how much increase of bulk takes place.

If the strength I have mentioned be adopted, we would have a preparation, containing in any number of minims, one-fourth as many grains of the base, and it would be a very convenient solution to use in dispensing small quantities.

Nitrate of bismuth dissolves readily in the proportion of glycerin mentioned, and the resulting glycerite can be diluted with a small quantity of water (an equal bulk or less), and yet retain all the bismuth in permanent solution.

If more than three parts of water be added to one part of the glycerite, a portion of the bismuth will be slowly deposited. The length of time elapsing before the precipitation commences, varying according to the amount of dilution. A few experiments were made to ascertain how different degrees of dilution would affect it.

One part of glycerite added to twelve parts of distilled water (by measure) commenced to precipitate in about two hours; one part in eight parts of water in four hours; one part in six parts of water in twenty hours; but in very dilute solutions it would stand much longer, as one part to forty-eight parts of water stood two days before showing any signs of precipitation.

On account of this fact of precipitating when added to water, the physician should always prescribe the glycerite of bismuth, and direct the patient to dilute it when using it.[1]

ON SOLUTION OF CITRATE OF MAGNESIUM.

By John W. Watts.

The formula for preparing solution of citrate of magnesium, as laid down in the "U. S. Pharmacopœia," is liable to a series of objections, in regard to preparation and preservation; the latter objection I do not think can be overcome by the present formula without seriously alter-

[1]Compare also notes on the same preparation, on page 89 of February number. —Editor.

ing its composition; the objections to the former are twofold, first as to the length of time consumed in dissolving the magnesia in the solution of citric acid with the water, and secondly the necessity of filtering it after it is dissolved. These two objections may be admirably overcome by simply substituting boiling water in place of the cold, as prescribed, making the formula read thus:

Take of	Citric acid,	450 grains;
	Calcined magnesia,	120 "
	Bicarbonate of potassium,	40 "
	Syrup of citric acid,	2 fl. oz.;
	Boiling water,	4 "

Dissolve the citric acid in the boiling water in a suitable vessel, and while hot add the magnesia, constantly stirring until dissolved; decant the clear liquid from any gritty sediment that may remain; then add the syrup and a sufficient quantity of cold water to fill a 12oz. bottle, lastly add the bicarbonate of potassium, and cork.

It is very important that the acid should be dissolved before adding the magnesia, for if the two be added together, and then the boiling water, it will form a tough gummy mass, which will be very difficult to dissolve, if at all. By this method it will not take longer than three or four minutes at the outside to prepare one or more bottles as required, whilst the officinal formula will require at least twenty minutes to complete one bottle. This saving of time is decidedly an advantage to those pharmacists who desire to dispense an article that is always fresh and pleasant to the taste; it can very readily be prepared with but little inconvenience while the customer is waiting at the counter, and I am sure that nine persons out of every ten would prefer waiting a few moments than be compelled to swallow an almost rotten preparation that has been kept any length of time.

Baltimore, January, 1877.

SUBSTITUTE FOR SOLUTION OF CITRATE OF MAGNESIUM.

Post Hospital, Fort A. Lincoln, D. T.,
January 16th, 1877.

To the Editor of "American Journal of Pharmacy."

The following formula is, I think, an excellent substitute for solution of citrate of magnesium, U. S. P.:

Take of	Acidum citricum (in moderate sized crystals),	℥i
	Magnesii sulphas,	℥ss—i
	Syrupus simplex,	f℥iii
	Extractum limonis,	♏v
	Potassii bicarb. (in crystals),	gr.xl
	Aqua pura, sufficient for	f℥xii

M. secundum artem.

The above formula is much cheaper, and contains in a greater degree the required properties of a good, mild laxative than does the officinal solution of magnesium citrate, and also has a very pleasant flavor, the bitter taste of magnesia being entirely absent.

It is also a very expeditious and convenient manner of preparing such a solution, and will, I trust, meet the approbation of those who have not the time to while away in preparing that (to drug clerks) tedious formula, sol. magn. cit.

The following is my method of preparing it: Place acid and sal Epsom in 12-oz. bottle, then add simple syrup and water and extract of lemon—lastly, add potassium bicarb., and cork ready for use. By using the acid and potassium bicarb. in crystals the danger of gas escaping is obviated, as gas does not begin to generate before the cork can be firmly secured.

Joseph Rhinehart,
Hospital Steward U. S. A.

COSMOLIN CREAM.

Editor American Journal of Pharmacy:

An excellent substitute for cold cream may be obtained by the following formula:

Take of	Cosmolin,	℥xxiv
	White wax,	
	Spermaceti,	āā ℥xii
	Glycerin,	f℥iii
	Oil of rose geranium,	f℥i

Melt the wax and spermaceti, add the cosmolin; then stir until nearly cold; add the glycerin and oil, and continue to stir until cold.

E. J. Davidson, Ph.G.

THE KEEPING AND DISPENSING OF EXTRACTS.

By J. C. Wharton.

Among the disagreeable things connected with pharmacy, scarcely any give more annoyance than solid extracts, and it is with a view of lessening the unpleasant features of this large class of our preparations that I offer the following suggestions. I cannot claim that the method herewith presented will be always practicable, but from sufficient experience can confidently recommend it as worth a trial. Before stating the proposition, however, I would prefer to give a passing notice of some of the defects in the manufacturers' part in putting up their extracts for general sale.

A very common fault is in the *consistency*. Solid extracts when first opened are not often too hard unless old, but quite frequently they are entirely too soft. Some, indeed, with a little more dilution would make passably good fluid extracts. To such an extent is this true that oftentimes a newly purchased lot of extracts will be received in such condition externally that the label is defaced and almost if not altogether illegible from the running out of the extract at the imperfectly covered top of the jar. To obviate this difficulty some manufacturers resort to a plan which dispensers, I am sure, would pronounce very objectionable in more than one respect, should their opinion be asked about it. The plan alluded to is that of placing *tin-foil* over the tops of the jars, between the cover and the extract. If the tin-foil were pure tin, one objection to this plan could not be urged; but as it usually contains a considerable proportion of lead, it must be objectionable on that account, if not dangerous to use for the purpose. However, even if harmless, it is a source of inconvenience and also loss to the dispenser, as it often gets so badly mixed with the contents of the jar as to be not easily removed, and if removed at all, occasions loss from adhering extract. Some manufacturers place a circular piece of bladder, or some sort of animal tissue, over the extracts, with much better judgment, it seems to me.

But to briefly state the point had in mind at the outset: I have found that a number of solid extracts can be kept in very good condition, and more conveniently for dispensing than in any other way I know of or have yet heard of, by simply making pills of certain sizes, ½ grains, 1, 2, 3, 5, 10, 20 grains, or any suitable weights, accurately

made, and keeping them in the usual white earthen jar, covered with an *abundance of lycopodium.*

The convenience of this method will be appreciated when once tried. Its advantages are: its readiness for dispensing; its neatness for handling and the cleanliness of the jar and label externally; its economy, compared with the usual mode of weighing small quantities as wanted, and thereby losing what sticks to the spatulas; its uniformity of strength (not being affected by subsequent drying or deliquescence, as usual); the full weight is given, whereas by the usual method of weighing on paper some is lost, not being removable.

To this last I would add a suggestion: instead of weighing solid extracts on paper, a better plan is to dust lycopodium over it on taking it from the jar, and to roll it between the fingers, dusted over with the same powder. The little ball may then be weighed, as any other solid, in the dish of the scale without sticking to it. The lycopodium would not add materially to the weight, as it may all be blown off except a very thin film. Should perfect accuracy be demanded, both pans of the scale may be dusted over with lycopodium and balanced with it; then the extract may be placed in the pan, on the powder, and weighed.

The main disadvantage that appears to present itself in the matter of keeping the weighed masses is the possibility of the extract becoming so dry as to be worked up in prescriptions with difficulty. This might be prevented by a proper addition of glycerin; and I am of opinion that, even should the extract become dry, it might be softened by placing a moistened sponge in the jar with the pills, in such a manner as not to wet them, but supply a moist atmosphere, and let the pills absorb moisture without altering their shape. I have not had occasion, however, to try this plan, and cannot speak positively about its successful application.

In conclusion, it may be stated yet that the pills may be put into different jars, or several sizes may be kept in the same jar, by making partitions, or by making such great difference in the sizes or shapes of the masses as to identify them.

Nashville, Tenn., Jan. 31, 1877.

A WORD IN DEFENCE OF SUGAR-COATED PILLS.

By J. B. Moore.

The practice of sugar-coating pills has been for some time the subject of severe, and I think, unjust criticism, and it is with the view of trying to correct some of the errors which have gained currency among medical men by what has been said and written, that I have prepared this paper.

Having been constantly selling and dispensing sugar-coated pills and granules since the practice has to any extent been adopted, I claim that I am somewhat qualified by experience and close observation to judge of the advantages and disadvantages of the practice as it affects their therapeutic qualities. In all my experience in selling and dispensing, I might say many hundred pounds of sugar-coated pills, I have never heard of a single instance of complaint of their inefficency or even tardiness of action, either from physicians or customers, which could, by any stretch of the imagination, be attributed to their saccharine investment.

The objections which have been urged against the practice of sugar-coating pills rest, I think, upon insufficient grounds, and cannot prevail with any force when the subject is properly considered in the light of practical experience. No arbitrary rule for general application can be made to govern the matter as to what pills should or should not be coated in extemporaneous dispensing. This must be left to the judgment of the physician or pharmacist, which judgment must be based upon the knowledge of the chemical nature, etc., of the ingredients composing the pills, and the circumstances under which they are to be employed. But I do contend that as a rule *almost all* pills which are to be kept more than a day or two, should be coated with something, sugar preferred when practicable, and more especially such as contain iodide of iron, or any of the ferrous salts of iron, asafœtida, etc., or any volatile or readily oxidizable substance. Very many substances are liable to change and to deteriorate by even a brief exposure to the variable hygroscopic conditions and other atmospheric influences, from which the coating *shields* them, and at the same time preserves the pill mass from that indefinite exsiccation and hardening which exposure would produce.

I think that all of the officinal pills, as well as the numerous popular pills, which the pharmacist is obliged to keep ready-made, such for

instance, as the comp. cathartic, comp. rhubarb, Hooper's and Lady Webster pill, and pills of iodide and proto-carbonate of iron, quinia, etc., should, by all means, be coated.

The opponents of coated pills may say "let every pharmacist make these pills in small quantities, and renew his stock every week or ten days." But, I would ask, what is to become of the old stock that remains on hand at each period of renewal, and which may be the bulk, and, in some instances, the entire lot; must these be discarded and cast away, and a new lot prepared, to be treated in like manner? Yet this must be done if we wish to meet the views of some of the opponents of coated pills, or else the pharmacists must make their pills up freshly when called for, which, I can assure my brethren, would entail upon the already complicated and onerous duties of the pharmacist an amount of labor, trouble and real annoyance, which to be appreciated must be experienced. I have realized a foretaste of this by being called upon, on several occasions, to prepare single doses of comp. cathartic, Lady Webster and various other kinds of pills, by persons whose newly-formed and unfounded prejudices against sugar-coated pills made them obstinately refuse to take them.

If the practice of sugar coating pills should be abandoned, I can assure both the medical profession and the public that they will have to use pills in a worse and more uncertain condition than they now have them in the sugar-coated form. And, unless my conceptions of human nature are very erroneous, the pill business would soon degenerate into a state of chaos and uncertainty, and the public would be served up with such a sorry set of pharmaceutical products in the shape of pills as to make them soon cry aloud for a return to the elegant and palatable sugar-coated pill, which has, for fifteen years, steadily grown into such unbounded popularity, not only with the medical profession but also with the entire public. How could they ever have attained this universal popularity if they had been insoluble, and, if insoluble, why was it not discovered long ago by medical men, who have been daily and almost even hourly prescribing them for years.

The use of glycerin in pill excipients is a very good thing as far as it goes, but it does not protect the pill from deterioration by exposure, nor does it shield the palate from the disagreeable contact of the "bitter pill." Furthermore, its hygroscopic character might, in some instances, render it positively objectionable, and in *no* case can it supply

the place of good sugar coating in preservative qualities. It is, however, an excellent excipient to employ in making pills, when eligible, either plain or coated, and I understand that the majority of our wholesale manufacturers of sugar-coated pills use it.

The argument that some pharmacists use against sugar-coated pills is that the wholesale manufacturer shares with us a portion of our profits. This weak argument may carry weight with some who have no business to occupy their time, but pharmacists who enjoy a fair run of business can spend their time much more profitably in other departments than they can in freshly making single doses of all the various popular pills for five cents each, which is the maximum price that three out of five pharmacists could get, and I have no doubt that many would be compelled to prepare them for 3 cents per dose. If any pharmacist would charge ten cents for a dose of comp. cathartic pills, his unemployed and, perhaps, ignorant neighbor would charge three or five cents, and thus either take his customer or compel him to "come down." For people are influenced very much now-a-days by the charm of cheapness, and especially in little matters of this kind.

The most popular pills, in my experience, are the officinal compound cathartic pills. These are in constant demand, and are most generally sold by the single dose, and, to accommodate customers, I keep them always put up in doses of three, four and five pills each, of which I sell many doses every day, and for the last fifteen years have sold none in this way but what have been sugar-coated, and presume that out of every fifty doses sold forty-five are in doses of only three pills each, it being very rarely that doses of four or five pills are called for, and I can scarcely recall to mind a single complaint of their inefficacy. This I consider a good test of the merits of sugar-coated pills. If the coating interfered with their solubility or activity I would most certainly have heard frequent complaints, for the public are not generally very mealy-mouthed or at all backward in telling the pharmacist of his short-comings, or of the lack of efficacy of any of his medicines. I also sell large quantities of sugar-coated Lady Webster's, compound rhubarb, phodophyllin pills, etc., and I never hear complaints of their inactivity. It is pills of this character, which produce decided and sensible effects upon the system, that are the best test with reference to their solubility.

If purgative pills will dissolve, which are liable to be hurried through

the alimentary canal by the increased peristaltic action produced by the smallest portion of the medical ingredient coming in contact with the mucous membrane of the bowels, how much more likely would the anodyne, alterative and other class of pills be to dissolve, which are liable to linger longer in their passage.

As a proof of the fallacy of the idea that sugar-coating diminishes or destroys the activity of pills, watch the steady and unwavering popularity of many of the proprietary pills, which are now, I believe, nearly all sugar-coated, such, for instance, as Wright's, Jayne's, Ayer's, Schenck's, Brandreth's, etc. Do you suppose for a moment, that if the coating of these pills interfered in the least with their activity, the proprietors would not soon discover the fact and at once abandon the practice. These men are shrewd and keep a steady eye upon their own interests, and offer to the great public their remedies in the most palatable and inviting forms. And if regular medical practitioners should insist upon dosing the public with uncoated, bitter pills, what would be the result? People who have hitherto been in the habit of using the various officinal and semi-officinal pills would buy and use in their stead some of the popular proprietary pills. This would be the natural sequence of the present crusade against sugar-coated pills, if successful.

Instead of abandoning the practice of sugar-coating pills I would rather encourage its more extensive adoption, and would recommend, if it could be conveniently done, the coating of all pills with something to conceal their taste and to protect them from atmospheric influence. If some facile and expeditious means could be devised by which the process of sugar-coating could be executed quickly, I would like to see it applied even to pills on the extemporaneous prescriptions of physicians, and thus shield the sensitive and delicate palate of the sick from the disagreeable taste and, sometimes, repulsive odor of nauseous medicines. I might, however, offer as exceptions to this rule all pills that are to be administered in diarrhœas, dysentery, cholera morbus, cholic, etc., where immediate or the promptest action is required, and where a highly exalted state of peristaltic action exists. In such cases it is probable that a freshly-made uncoated pill might be preferable.

To many persons a pill is the most acceptable form in which medicine can be administered, while to others pill-taking is a very

unpleasant task, and the idea of swallowing a pill is associated with the most unpleasant sensations, amounting, in some cases, to the utmost disgust; I have known many persons who positively could not swallow a pill. Some people always have to hold a pill in their mouths for some time, and it is only swallowed after the most strenuous efforts. This very repugnance and disgust, experienced by many persons, in taking pills and difficulty in swallowing them, has been, in many instances, I have no doubt, engendered by their being compelled to take bitter and nauseous uncoated pills, whereas had they been sugar-coated, they might never have experienced the slightest difficulty in taking pills at any time.

If regular physicians wish to render their practice unpopular with the public and encourage and foster homœopathy, let them sanction and join in the recent opposition to sugar-coated pills, and continue to discourage the employment of other elegant and palatable forms of remedies which an enlightened pharmacy offers them.

I consider opposition to sugar-coated pills an unfortunate retrograde step, and as unjustifiable and unnecessary as it is injudicious and damaging to the interests of both medicine and pharmacy. I think it should be the aim of every pharmacist, who feels a just pride in his profession, to encourage rather than discourage the adoption and perpetuation of any practice that gives elegance to his products and that renders his preparations as agreeable to the taste and as inviting in appearance as possible. The very appearance of a medicine may invite, or it may repel and excite feelings of disgust in the mind of a patient. Physicians should feel it their duty, as it most certainly is of paramount importance to their interests, to aid and encourage pharmacists in their efforts in this direction, by using and recommending such improved forms of remedies. I refer, of course, to legitimate and substantial improvements. I don't expect a physician to adopt and prescribe every new-fangled thing to which the pharmacist may call his attention, either personally, by circular or by sample, the real merit of which may be all in the label, the true composition being kept a profound secret and only known to the pharmacist himself, and the whole thing, perhaps, only a fraud and deception.

The more elegant in appearance and the more palatable medicines are the more popular the regular practice will become. It has unquestionably been, in a great measure, the disagreeable and repulsive doses of

the regular practitioner, and the palatableness of homœopathic remedies that has given the latter practice such a foothold, and rendered it so popular among the most cultivated and refined classes of our population. It is not among the ignorant and poor that homœopathic practice has attained its greatest popularity, but it is with the more cultivated and refined, whose delicate and fastidious palates revolt at nauseous doses of regular medicine. It is this class of people who will employ that doctor who will give them pleasant remedies, even though they may not really have so much confidence in his skill, in preference to one who deals out to them nauseous draughts. To ascertain the truth of what I have said, inquire of those who employ homœopathic physicians, and I will guarantee that three out of every five persons will tell you that they were allured to the latter by their pleasant remedies. Mothers will tell you that their medicines are so nice for their children; that their little darlings take their medicines so easily. There is no coaxing and petting necessary; no throwing of their little pets upon their backs and holding their noses while they pour the nauseous doses down their little throats, and then witnessing their sobs and heart-rending cries, since they have employed the homœopathic doctor.

The physician who studies to please the palate of his patient, especially if it be a woman or child, does a wise thing, in that he fortifies himself in their confidence and respect to that degree that it would require some powerfully adverse circumstance to destroy. Many, many times have I heard ladies say, oh! I do like Dr. So and So so much, he always prescribes such pleasant medicines. Hence, I say to the medical profession, pause and reflect awhile before you fall into the fatal error of taking the backward step of opposing and discouraging the use of sugar-coated pills, which give so great a finish and so much elegance to this form of remedy.

The theory of insolubility of sugar-coated pills is, at first sight, a very plausible one, and therefore apt to be accepted by medical men as true, without their having taken the time and trouble to test its verity. And especially are such theories likely to gain credence and rapid currency when they emanate from prominent writers, or are heralded by any of the "Sir Oracles" of a profession. But generally such false notions sustain but an ephemeral existence; they may for a while, like the "will-o'-the-wisp," lead the unwary astray, but they cannot long withstand the sunlight of truth and scientific practical investigation, and,

"Like bubbles on the sea of matter borne,
They rise, they break, and to that sea return."

When a remedy or form of remedy is placed under the ban of suspicion, as sugar-coated pills have been, since the senseless tirade against them was started, it is apt to be blamed unjustly, and failure of therapeutic activity ascribed to it, which *may be due* to the deranged condition of the system. The usual dose of the officinal compound cathartic pill may, in the same individual, at one time produce excessive action, while at another time it may be wholly inoperative. So with quinia and other tonics; they may at one time act with great precision, certainty and with magic power, while at another time, may be continued for weeks without any appreciable effect. This capriciousness and uncertainty of the action of medicines is a problem very difficult of solution. This lack of activity, or uncertainty in the action of a medicine may depend on some abnormal condition of the fluids and secretions of the stomach and intestinal canal; hyperæmia or vascular fullness of the mucous coat may retard or effectually prevent absorption, although the medicinal substance may be dissolved or digested, and in the most favorable condition for assimilation. Both the gastric and intestinal secretions are very much influenced also by the variable condition of the nervous system, even absorption or endosmotic action may, in a measure, be suspended or entirely suppressed by certain nervous conditions. This is evidenced by the almost entire suspension of digestion produced in sensitive persons by the sudden announcement of bad news or any powerfully depressing circumstance. Grief or great trouble of any kind in persons of a nervous and sensitive organization, may often produce an awful sense of weight and oppression in the gastric region after food, accompanied by depression of spirits, etc. Every nervous and dyspeptic person has, I have no doubt, experienced the truth of this.

Idiosyncracies of individuals, which may be unknown to the physician, may also dwarf the power of medicines and interfere with their physiological action and pervert their therapeutic effects. Opium, belladonna and other narcotic and anodyne remedies, when given to relieve neuralgic and other painful affections and to produce sleep, often produce effects diametrically opposite to what are expected of them. Calomel and other preparations of mercury, iodide of potassium, arsenic, the various preparations of iron, etc., are all conspicuous examples of a large

class of medicines which often fail in exerting their normal therapeutic effects, which, if administered in the pill form, may be unwittingly and unjustly ascribed either to their age or to their coating. These, with many other circumstances well known to medical men, may interfere with digestion, absorption and assimilation, and conspire to render the action of medicines uncertain. Hence, to test the relative merit or activity of the various kinds of pills, it is absolutely necessary in order for the therapeutist to arrive at a just and rational conclusion, that he should take into careful consideration all the various disturbing causes which beset the action of remedies.

In consequence of the doubt and uncertainty created in the minds of physicians and pharmacists regarding the solubility of coated pills, several pharmacists instituted a series of experiments by means of artificial digestion, to test the relative solubility of the various coated and other ready-made pills of the day. With the results of their experiments the readers of this journal, I presume, are aware. But the utmost all such experiments can demonstrate is the relative solubility of the pills under treatment in the artificial mixture in which they are digested or macerated. They cannot convey any definite or even proximate idea of the relative solubility of the pills when they are submitted to the natural process of digestion as it is conducted in the human stomach and intestinal canal. The conditions under which the artificial digestion is conducted are all so entirely different from those attending the natural process as to render comparison of results *entirely out of the question.* There is absence of the genial warmth and the muscular movements of the stomach and intestinal canal, and of the disintegrating influence of the constant agitation, trituration and the attrition to which the pill is subjected in contact with the particles of food, etc., usually present in the alimentary canal, and the powerfully solvent action of the various secretions not only of the stomach, but those of the entire mucous surface of the intestinal canal, all of which are so destructive to the integrity of the pill mass. These, we might say, are all wanting in the artificial process, and will ever render the latter, no matter how carefully conducted, nugatory and barren of even an approximation to positive or satisfactory results.[1]

[1] Dr. Dalton, in his "Treatise on Human Physiology," page 133, says, concerning the muscular movements of the stomach, that this "continuous movement of the stomach is one which cannot be successfully imitated in experiments on artificial

The most valuable and most satisfactory experiments ever made to test the digestive power of the gastric juice, both in and out of the stomach, were those made by Dr. Beaumont upon his subject St. Martin, in whom there existed, as the result of a gun-shot wound, an opening leading directly into the stomach, three inches from the cardiac orifice. From this opening, gastric juice could be obtained and the process of digestion inspected, which afforded Dr. Beaumont unusual opportunities for experimenting. In order to show the fallacy of comparing artificial digestion with the natural process, I shall here quote from one of the experiments of Dr. Beaumont as I find it recorded in "Carpenter's Principles of Human Physiology," page 424.

A portion of meat was submitted by Dr. Beaumont to artificial digestion, under the most favorable circumstances, with gastric juice taken from the stomach of St. Martin, which required from 11½ o'clock A. M. to 9 o'clock P.M. for complete digestion, while another portion, exactly similar, was placed *in the stomach* of St. Martin at the *same time*, was, at *one o'clock* P.M., found "to be all completely digested and gone."

Thus, it appears that meat, when submitted to artificial digestion, even with natural gastric juice in its nascent state, taken directly from the living human subject, required eight hours (six times) longer for complete digestion than it did when submitted to the crucial test of the natural process, which demonstrates how fallacious and unreliable must ever be all experiments made by artificial digestion with artificial gastric juice.[1]

In many, if not in the majority of cases in which medicines are administered in the pill form, I believe there are actual physiological advantages derived from the slow and gradual solubility of the pill mass in the stomach and intestinal canal. This not only protects the often sensitive mucous membrane of the stomach from the shock which the

digestion with gastric juice in test-tubes, and consequently the process under these circumstances is never so rapid or so complete as when it takes place in the interior of the stomach."

[1] Dr. Carpenter, in commenting upon these experiments of Dr. Beaumont, page 424 ("Carpenter's Principles of Human Physiology"), remarks that this tardy action of artificial digestion "is readily accounted for, when we remember that no ordinary agitation can produce the same effects with the curious movements of the stomach, and that the continual removal from its cavity of the matter which has been already dissolved must aid the operation of the solvent on the remainder."

sudden contact of the full force of the medicine might produce, but also allows absorption to take place gradually and more thoroughly than when the pills are freshly made and liable to be completely dissolved in a few minutes. Cathartics, particularly, are extremely liable in nervous and sensitive persons to irritate and sicken the stomach, consequently medicines of this class are often given, and are borne without discomfort, which, if administered in mixture or liquid form, would cause great distress and perhaps be ejected. The same is true of bi-chloride of mercury, iodide of potassium and many other substances which might be named that are of an irritant character. The truth of this is exemplified in the almost every-day experience of the physician and pharmacist. For the reasons here stated, physicians are not unfrequently in the habit of prescribing "old opium pills" in preference to those freshly made (see "Pil. Opii," U. S. D.); and if this be true in the case of opium, why should it not also be true in regard to many other medicinal substances. I believe that the fears entertained by some concerning the inefficiency and untrustworthiness of pills that are not freshly made to be more imaginary than real. I do not believe that there is any disadvantage in pills being old and hard if properly made, whether coated or plain, provided they have been properly preserved, and do not contain any ingredients liable to change or spoil by time and exposure. They may, perhaps, not dissolve quite so quickly as newly-made pills, but will dissolve more gradually and in due time, and be as complete and as thorough in effect and less liable to perturb the system. I have sold uncoated cathartic pills of different kinds, which I have kept on hand for years, and never found them less efficient than when they were freshly made. Slow and gradual solution throughout the digestive organs favors absorption by presenting successively fresh portions of the medicinal ingredients to the mucous membrane, and thus permitting them to be absorbed, particle by particle, through the whole course of the alimentary canal without irritating or fatiguing the organs; especially is this true of all tonic and alterative pills.

It is surprising what increased power remedies sometimes acquire when presented in small but successive fresh portions at a time to the mucous surface of the stomach and intestines. It is this frequent repetition of minute doses which gives homœopathy its success when it derives any at all from medication. We often see ipecac and other

emetics and nauseants, as well as purgatives, produce excessive action when given in minute doses and repeated every hour or so, whereas five times the dose might be given at once without, perhaps, producing any sensible effect.[1]

It would seem that many pharmacists labor under the erroneous impression that digestion is conducted alone in the stomach, but this is a great mistake.[2]

Gastric digestion is only the first stage or commencement of the process. After a pill has been subjected to the solvent action and digestive power of the fluids of the stomach and the rough handling it receives from the muscular movements of that organ,[3] if it is not dissolved, it then passes to the duodenum, where it meets with the secretions of the pancreas and liver and those of the villous coat of the intestinal canal, which, together with the gastric and salivary fluids which have passed the pylorus from the stomach intermingled with the chyme, forms a combination of greater digestive and solvent power than that of the stomach itself.[4]

[1] Dr. Dunglison, in his "Therapeutics and Materia Medica," vol. 1, page 168, well elucidates this fact by a case which he says the late Dr. James Gregory, of Edinburgh, was in the habit of relating in his lectures: "A boy was directed to take an ounce of Epsom salt, but having a strong objection to the taste of the cathartic, resolved to form it into pills with crumb of bread. On making the pills of an appropriate size, he found they amounted to three hundred and sixty, a number so near to that of the days of the year that he determined to make it correspond entirely. Accordingly he divided them into three hundred and sixty-five portions, and took them all, one after the other. The effect was extraordinary. The most violent hypercatharsis was induced, so as to endanger his life. This was owing, probably, to the gradual and successive breaking down of the pills in the canal, so that particle after particle came in contact with the mucous membrane."

[2] Dr. Reese, in his "Analysis of Physiology," page 172, says: "A more complete digestion, in fact, takes place in the upper portion of the intestines than in the stomach itself."

[3] Dr Reese, *loc. cit*, page 167, says: "When the food has reached the stomach it is subjected to a peculiar peristaltic movement. This is produced by the contraction and relaxation of the various fasciculi of the muscular coat; it causes a complete revolution of the contents, in every direction, and a consequent thorough trituration."

[4] "The fluid of the small intestines, which is compounded by the intermixture of the biliary and pancreatic secretions with the salivary and gastric fluids, and with the secretions of the intestinal glandulæ, appears to possess the very peculiar power of dissolving or of reducing to an absorbable condition alimentary substances of every class, thus possessing more of the character of a 'universal solvent' than either of

From the duodenum it passes on through the remainder of the small intestines, and through this long and turbulent route of about twenty-five feet of intestinal tube it is subjected to the warmth and solvent action of the secretions and fluids of the canal and the attrition and peristaltic movement of the bowels, which promotes rapid solution and disintegration.[1]

From the small intestine the pill passes into the large intestines, and even here it is confronted with fluids destructive to its entirety; for it is the opinion of some physiologists (see "Kirk's and Paget's Physiology," page 199) that the cæcum also secretes an acid fluid similar to the gastric juice, capable of digesting substances which have eluded or resisted the action of the stomach and passed unchanged through the small intestines. If digestion and absorption did not take place to some extent in the lower portion of the intestinal canal, what would become of the excremental matter that would accumulate in the lower bowels of persons who suffer from obstinate and protracted constipation, who are sometimes for weeks or even months at a time without a passage, yet who diurnally take their usual quantity of food. The average quantity of excrementitious matter daily ejected by an adult is estimated by physiologists at from four to six ounces. There must certainly be some provision made by nature in the lower portion of the intestines for the solution, or reduction to an absorbable condition of the large amount of solid matter which would accumulate in protracted cases of torpid bowels. Of course, as is well known, about three-fourths of this matter is of an aqueous character, which may be gradually absorbed by long contact with the mucous coat of the bowels; but there must still remain, in some cases, a large bulk of solid and

these secretions has in its separate state." ("Carpenter's Principles of Human Physiology," page 432.)

In reference to the digestive power of the fluids of the intestinal canal, Dr Dalton (*loc. cit.*, page 145) says: "Although the separate actions of these digestive fluids, however, commence at different parts of the alimentary canal, they afterward go on simultaneously in the small intestines; and the changes which take place here, and which constitute the process of intestinal digestion, form at the same time one of the most complicated and one of the most important parts of the whole digestive function."

[1] "The process of digestion and conversion are probably continued during the entire transit of the alimentary matter along the small intestine, and at the same time the products of that conversion are gradually being withdrawn by absorbent action." (Carpenter, *loc. cit.*, page 433.)

extremely indigestible matter, which must undergo a thorough transformation before it can be taken up by the absorbents, and which, if it should remain would produce great discomfort or even endanger life. This labor must be performed either by the fluids which pass down intermingled with the solid matter, or else by the secretions of that portion of the intestines themselves.

But even should this not be the case and such a fluid not be present, the pill, while sojourning here and in the remaining portion of the bowels, will nevertheless be subjected to the softening and solvent action of the warmth and moisture of the parts, and the disintegrating effects of peristaltic action, while at the same time absorption will take place, even from this remote region, and the medicinal ingredients will exert their therapeutic effects in a measure, if not to their full extent, because whenever a medicinal substance comes in contact with a mucous membrane or an absorbing surface, under favorable conditions, it will be taken up and exert its medicinal effects. This is illustrated by the effect of medicines and alimentary substances when administered per rectum, or when medicinal substances are administered per vagina, or when applied to a denuded surface or injected into the veins or under the skin, or when absorbed from the mucous membrane of the air passages.

Thus we see that a pill finds no quiescent state or haven of rest from the moment it enters the cardiac orifice until it passes the exit gate of the rectum; and it would seem to me that a pill, whether coated or uncoated, new or old, would have to be insoluble, indeed, to be able to stand the thorough trituration that it receives in the stomach and then to pass unchanged through the entire intestinal canal, a distance of about thirty-five feet. Therefore I would say that a pill that could run the gauntlet of such an ordeal deserves to escape. And what though a refractory pill should occasionally be found capable of such a feat, and "live to purge another day," this would not warrant us in unqualifiedly denouncing the practice of sugar-coating pills, a practice which confers such a blessing upon the invalid. Because we discern a spot upon the sun's disc, that is no reason why we should at once extinguish that glorious luminary.

Since the hue and cry against sugar coated pills has been started I have heard a great many outlandish stories told concerning them by medical men. A friend of mine in one of our wholesale drug houses

informed me some time ago of a physician in Chester county, Pa., who told him that he had in his possession a half-pint bottle filled with sugar-coated pills, which he had garnered, that had passed through the alimentary canals of his patients unchanged. Another physician, residing in this city, informed a friend of mine that he had found handfuls of sugar-coated pills that had passed from his patients unscathed. Now, I don't like to question the veracity of these gentlemen, but I am constrained to say that I don't believe these stories.

> "Lest men suspect your tale untrue,
> Keep probability in view."

I think that I would be safe in offering five dollars apiece for all the sugar coated pills made by any of our reputable manufacturers that can be obtained and presented *under oath* as having passed the alimentary canal undissolved under ordinary conditions of that organ. I doubt very much if enough could be collected within a year in the United States to fill a half-ounce bottle. I really think that these over-zealous relic-hunters have mistaken cherry-stones for sugar-coated pills.

When the mucous coat of the stomach and bowels are in such an excited and irritable condition as is sometimes the case in diarrhœa, dysentery, cholera morbus, etc., peristaltic action may be so excessive as to hasten the passage of substances to such a gait that time might not be given for solution or perfect digestion to take place. Under such circumstances *it might be possible* for a pill, whether coated or uncoated, new or old, to pass through the alimentary canal undissolved. Under such conditions, even portions of food may pass whole or unchanged, which under ordinary circumstances would be very digestible. But these are exceptionable cases, and even in such cases, I believe particles of *very digestible* food would be more likely to pass undigested than would medicinal substances, because such remedies as would be administered in such cases would be likely to, temporarily at least, control and restrain inordinate peristaltic action, so as to allow a pill to be dissolved when portions of food might pass unchanged.

I have, in another part of this paper, said that in the case of pills that were to be administered in diarrhœa, etc., or that were desired to act promptly, there might be some advantage in their being freshly made and uncoated, but I question very much whether there is actually any advantage accruing therefrom even in such cases. Observation and experience in the use of this form of medication would seem

to indicate that this was *not* the case. During the whole course of my early experience in pharmacy, I had occasion to make large quantities of a pill composed of opium, camphor and capsicum. This pill with many physicians was extremely popular. It was considered almost a specific in diarrhœa, dysentery, cholera morbus, and during the prevalence of epidemic cholera it was used by a great number of physicians of my acquaintance with the greatest success, in fact it was their sheet-anchor of treatment. These pills we used to make up in quantities of thousands at a time. This was almost before sugar-coating was thought of, or at least before it was introduced to any extent.

The excipient employed in making these pills was gum arabic and water, the most insoluble excipient that could be employed, and these pills were often kept on hand for months before they were used, yet no complaint was ever heard of their tardiness of action or inefficiency. One physician of my acquaintance, the late Dr. Wm. S. Latta, of near Parksburg, Pa., employed these pills very extensively in his practice. I used to prepare them for him in lots of from five hundred to a thousand at a time, which, under ordinary circumstances, would last him for a year or longer. Yet he never found these pills to lose their virtues by the petrifying hand of time, although they were used in diseases in which the alimentary canal is in the most sensitive and irritable state, and in the most unfavorable condition for solution, absorption and assimilation. This is not only my experience in the pill trade, but I have no doubt it has been the experience of thousands of other pharmacists who have had a long and large experience, and who have been observing.

This is the best kind of evidence of the power of the stomach and intestinal canal to dissolve pills that have been long kept and that are *uncoated*, while it speaks in thunder-tones in favor of pills that are *coated;* because if pills are found to be soluble and active that have been kept for years uncoated, how much more soluble would they be when carefully made and properly sugar-coated. Besides, whoever heard of frequent complaints, by physicians or any one else, of the insolubility or inefficiency of pills, either coated or uncoated, until this terrible "bug-a-boo" of insolubility of sugar-coated pills put in an appearance, notwithstanding millions of boxes of the various proprietary pills have been sold for years and years, and thousands of pounds of officinal and semi-officinal pills, saying nothing about the mongrel

varieties dispensed over the counters of pharmacists and from the offices of physicians all over the country. Many of these pills, both proprietary and those of regular pharmacy, had been kept on hand for years until, I might say, they have almost grown grey with age before they were used, yet were found to have retained their pristine and youthful activity and energy, and no sepulchral voice was ever heard, or if at all, very rarely against their efficiency.

It is by the practical experience and close observation in the sale and use of medicines of this kind that this question or problem of solubility or insolubility can be settled, and it is only upon this kind of testimony that any man, either physician or pharmacist, can base an intelligent judgment, and not upon hypothesis or the idle speculations of theorists, whose opinions are often like "airy nothings."

Even the coating of pills with silver and gold leaf, which was at one time so much in vogue, has been found by experience not to interfere with their solubility. Prof. Parrish, in his "Pharmacy," page 802, 1864, remarks, "Since the issue of the former edition of this work, the ancient practice of coating pills with silver and gold leaf has been revived." Same volume, page 803, he also says, "The former belief that a coating with metallic leaf, if sufficient to hide the taste and smell of the pills, would interfere with their solubility, has been very much modified by recent experience."

We want for testing the relative solubility of sugar-coated pills or of any other kind of pills in the alimentary canal, not test-tubes, tumblers or other utensils and artificial gastric juice, but what we want for this important purpose are living human alimentary canals. The pill which may be most soluble in artificial mixtures might be the last to return to its elementary condition in the gastric and intestinal fluids.

This question is strictly within the domain of the careful and intelligent therapeutist and the experienced and close observer of the action of medicines upon the human organism; and the hospital, dispensary and the private practice of the physician are fields pregnant with opportunities for experiment.

The action of the various secretions of the alimentary canal, and the influences that are at work in that living crucible, are in a great measure shrouded in doubt, and in the present state of science inscrutable to man. We can only imperfectly judge of their action by certain phenomena and results.

Besides, the materials of which pills are usually composed, will much more quickly dissolve or liquify in the fluids of the alimentary canal than will ordinary alimentary substances. In the former there is not that obstinate cohesion to overcome in order to reduce to an absorbable condition, that would be presented by the muscular fibre and vegetable tissue and other tough and insoluble parts of alimentary substances. Almost any pill-coating or pill-mass will dissolve and readily disintegrate by simple maceration for a few hours in water at the temperature of 100°, with occasional agitation, whereas you might soak a piece of beef steak or cabbage for some time before you would reduce it to a state of fluidity.

There is still another very important circumstance in the history of the digestive process, which seems to have been overlooked, or its importance not properly estimated in the consideration of this subject, and that is the length of time a pill, under ordinary circumstances, would be likely to be subjected to the solvent and digestive powers of the fluids of the alimentary canal in its passage. It is estimated by physiologists that alimentary substances average from one to two days in their transit along the intestinal tube, and from two to five hours or longer are spent in the stomach. This slow passage and long maceration in the corroding juices of the canal must insure, beyond peradventure, the thorough solution of any pill-coating or pill-mass, unless of adamantine hardness. If hyperæsthesia of the intestinal tube or other morbid condition should exist which may accelerate peristaltic movement, of course a more rapid transit would be likely to take place. But again, there are frequently inactive and comparatively stagnant conditions of the intestinal canal, in which a pill may loiter for days or even longer.

The great length of the intestinal tube, which is about six times the length of the entire body, with its numerous convolutions and varied secretions, is wisely provided by nature to adapt it to the work of a thorough digestion and absorption of indigestible alimentary matters, etc.

Upon inquiry I find that the materials most generally employed by sugar-coated pill manufacturers for making their coating, is sugar and starch, only a few add a trace of gum Arabic. It must therefore be evident to every intelligent pharmacist or other persons having a knowledge of the solvent power of aqueous fluids, when maintained at the temperature of 100°, over any mass composed of such materials,

that even the simple maceration of a pill in the juices of the intestinal canal, for from 24 to 48 hours, under the influence of the constant agitation of peristaltic action, leaving out of the question gastric digestion, would be sufficient to dissolve any pill-coating made of the above materials, even if the intestinal fluids possessed no greater solvent power than simple water.

Since the opposition to sugar-coated pills started, several manufacturers of gelatin-coated and "compressed" pills have loomed into prominence. The chief virtue upon which these manufacturers base their superiority over sugar-coated pills, and ask for them a preference, is their asserted greater solubility, and it is this assumed merit alone which, with judicious advertising, has secured them a passport to a certain amount of favor among physicians.

Now, I am for progress always, and the profession will find me an ever zealous advocate of any change in the form of any remedy that will augment its therapeutic virtues or render its administration more easy, and which carries with it real improvement; but to introduce a change or multiply forms simply for the sake of novelty, or to gratify whims or caprice, which will at the same time complicate the business of the pharmacist and lead to confusion, such innovations I shall ever oppose to the extent of my feeble influence.

The "compressed" and "gelatin-coated" pills, in my opinion, are simply novelties, and very expensive ones at that, especially the former. I have never heard complaints urged against the oval shape of the gelatin-coated pills, which, however, I deem objectionable, as rendering them difficult to swallow, but I have heard customers complain of the flat form of the compressed pills, rendering them more difficult to swallow than that of the round sugar-coated pills. Where there is one person that could more readily swallow a flat or oval body, there are fifty who would prefer to swallow a round one.

As the compressed or gelatin coated pills possess no real therapeutic superiority, nor any advantages in point of ease of administration over the ordinary sugar-coated pills, I consider their introduction seriously objectionable. Such innovations only tend to entail greater trouble and annoyance upon both the physician and pharmacist, complicate the business of the latter and lead to confusion with the former, without conferring compensatory advantages upon either. To keep a full stock of all the varieties of compressed and coated pills would involve an

amount of capital almost equal to that required to furnish the ordinary stock of a small retail drug store.

If physicians and pharmacists continue to give their sanction and encouragement to the popularization of every new-fangled novelty, in the shape of anybody's coated pills, there is no telling where this thing will end. They will be likely to increase and multiply *ad infinitum*, until the coated pill business will soon become as great a nuisance and as troublesome to pharmacists, if not more so, than the "Elixir" business was, which some members of our profession complained so bitterly of.

If these pills were prescribed by the generic titles of "compressed" or "gelatin-coated," without the name of any particular manufacturer being specified, then the trouble and annoyance to the pharmacist would not be so great. Many of our wholesale manufacturers of pharmaceutical products have recently engaged in the manufacture of both compressed and gelatin-coated pills, and as many more, I have no doubt, will soon enter these "fresh fields and pastures new," and if the thing takes, there is no telling how many more will get at it. And all, of course, anxious to introduce their particular make of pills, will flood the entire domain of both physic and pharmacy with circulars to induce physicians to prescribe and pharmacists to buy their products. So, as I have said, if we are to keep a full assortment of everybody's make of compressed and gelatin-coated pills, in addition to our regular and staple sugar-coated stock, what are we to do? It will soon be necessary for us to not only increase our capital stock, but also to enlarge our places of business to afford increased accommodations for their storage.

I have, in common, no doubt, with many others of my brethren, already experienced a foretaste of the inconvenience and trouble that the advent of these new varieties of pills are likely to cause. Every once in a while we receive a prescription for somebody's compressed or gelatin-coated pills, which perhaps are for some impecunious individual who possibly has hardly the means to buy bread, and we are compelled to send out to some remote pharmacist, whose peculiar location gives him sufficient demand for these sporadic pharmacals to warrant him keeping a stock of them on hand. We there procure these pills, and pay so high a price for them that we are obliged, in the majority of cases, to charge almost the same price for them without any compensation for our trouble and annoyance. For if we were to

charge a reasonable profit, our customer would accuse us of extortion while the physician would come in for his share of censure for prescribing such high-priced remedies. Thus, the price alone I consider a very serious objection to these pills.

The gelatin-coated pills, although somewhat higher priced than the sugar-coated, yet are much more reasonable than the compressed. As an illustration of this, I will here quote the net list prices of a manufacturer, whose compressed pills have attained prominence and are very generally prescribed by physicians in this city, comparing them with the net prices of sugar-coated pills of our leading manuacturers.

		Compressed.	Sugar-coated.
Compound cathartic pills, per hundred,		$1.12	25 to 30 cents.
Sulphate of quinia, 1 grain,	"	1.57	70 to 95 "
Lady Webster's pills,	"	1.12	25 "
Compound rhubarb,	"	1.12	38 "

Thus it will be seen that the prices of compressed will average about four times the price of the same kind of sugar coated pills of our best manufacturers. And what is this enhanced price all for, which every man, woman and child will have to pay, when these pills are prescribed? It is simply, in my opinion, for the shape of the pill, which I consider not so good or desirable as that of the sugar-coated pill.

These prices I regard as excessive, considering the cost of the material, labor and time in manufacturing. Now, if there was any earthly advantage therapeutically in these pills over the sugar-coated ones, there would then be something to justify the physician in prescribing them; but it will require some stronger evidence to convince me of their superiority than the mere asseveration of their patentees or manufacturers. We want, in my opinion, no better pill than the sugar-coated, when it is properly made. Sugar-coating, when well done, is the very *acme* of elegance of all forms of coating.

So far as the sugar-coating of pills is concerned, I believe that all of our more reputable manufacturers vie with each other in the beauty, elegance and perfection of their coating, and also pay due regard to the solubility. This they would do for the sake of their own reputations and for the popularity of their products. There are, I have no doubt, some who might not be over-conscientious about substituting cinchonia for quinia or podophyllin for extract of jalap, in the pill mass, and who would not deign to spoil the coating for the sake of

saving a few cents. This would be too like "spoiling the ship for a shilling's worth of tar."

I have no fear myself of the solubility of pills in the alimentary canal, whether they be coated with sugar or gelatin or compressed. What I would dread more than anything else in ready-made pills would be the deception and fraud which might be practised by dishonest manufacturers in the selection and proportionment of the ingredients. Although, I must confess, that I have much faith in the probity and conscientiousness of most manufacturers, and believe the sugar-coated pills of our leading houses to be about as reliable as any other class of pharmaceuticals which we buy ready-made, and which we have no means of ascertaining the quality of by convenient and reliable tests. We, of course, with sugar-coated pills, as with extracts, fluid extracts, powders, etc., have to rely upon the honesty of the manufacturers for their purity and proper proportions of the materials used in their fabrication, and the care and skill employed in their production.

The only plan that can be adopted by the pharmacist to avert the danger of the deception to which he is liable by the faulty composition of ready-made pills, is for him to make in his own laboratory all his own pills, and then send them to some skillful and reliable person and have them coated to his own order, if he has not the facilities for doing so. By this means he can always feel assured of the quality of his pills, and can recommend them to his customers and to physicians with confidence. This, in fact, every pharmacist should do, not only with sugar-coated pills, but with every pharmaceutical preparation he sells that he is capable of making properly.

Unfortunately, however, too many pharmacists, like the retail clothier, buy their goods ready-made—a practice too reprehensible to need comment. Of course there are some preparations for which the demand is too limited to warrant the pharmacist in making; the time, trouble and waste of material in the preparation of so small a quantity would often deter him, and very justly too, from the task. But all pharmaceuticals, for which there is a reasonable demand, should be made by the pharmacist himself.

Before quitting this subject, it may not be improper for me to address a word or offer a few suggestions to the manufacturers of sugar-coated pills, although what I may offer may not be new to many.

In coating pills of asafœtida, iodide and protocarbonate of iron, or

those containing camphor, myrrh, phosphorus or any of the volatile oils, or in fact, any volatile or readily oxidizable substance, the greatest care should be exercised to avoid exposure to too high a temperature. The desiccation should, I think, be conducted in a dry atmosphere, at the ordinary temperature. This would involve a longer exposure, but it would entail less risk of partial decomposition or volatilization of the active ingredients. And in all pills containing such or similar substances, would it not be well to first give them a coat of tolu before that of sugar is applied? Would not such a plan aid very greatly in preserving such pills from change or loss of activity, when long kept? With the fear of that awful "bug-bear" of insolubility before their eyes, sugar-coated pill manufacturers often commit the error of coating their pills before they are properly dried. In consequence of this, the moisture often soaks through the coating, the pills become discolored, often taste of the ingredients and are unfit for sale. All pills should of course be dried with care, preparatory to coating, but unless they contain any volatile or oxidizable substances, rapid drying to the proper condition for coating can do them no possible injury.

The object of this paper is to show the injustice and to demonstrate the utter fallacy of the tirade against sugar-coated pills.

In order to convince my readers of the sincerity of what I have said, and to attest my faith in the powers of the *human* alimentary canal to dissolve any properly made sugar-coated pill, I make the following offer: I will present to any chemist, physician or pharmacist in the United States, as a reward of merit, the sum of *twenty-five dollars*, who will manufacture a pill-coating from the same kind of materials, and in the same proportions, and by the same process usually adopted by our best manufacturers of sugar-coated pills, which will render a sixth, quarter and half grain morphia pill, or the officinal compound cathartic pill, insoluble and inoperative, and fail of producing their characteristic therapeutic effects when properly administered, under any physiological conditions of the system or alimentary canal in which these same kinds of pills *will* display their usual medicinal effects when *freshly* made and uncoated.

I wish it to be understood that in writing this paper I have "no friends to reward nor enemies to punish"; I merely write in the interests of science, my profession and for the welfare of the sick. In writing

upon such an important subject, I feel it incumbent upon me, as it should be upon any one, to speak the truth and give expression to my honest convictions, "hew to the line, let the chips fly where they will."

I have given this subject much thought and careful consideration, and have treated it in this minute and thorough, and, I hope, impartial manner which its importance demands; and should I have, inadvertently, made any erroneous statement, I shall be most happy to have any physician or pharmacist who may be more enlightened upon the subject than myself, to correct me.

Philadelphia, Pa., February, 1877.

A READY TEST FOR ARSENICAL COMPOUNDS.

By Edward Gaillard, Ph.G.

Read at the Pharmaceutical Meeting, February 20th.

Who is the pharmacist that has not been called upon by his patrons or the physician to know, at once, if this powder or that liquid did not contain ratsbane or arsenic, and often been obliged to make some excuse for the lack of knowledge, or felt the want of a more simple and ready test for the detection of arsenic, than the old, time-honored one of Marsh's. If we have the apparatus, or extemporize one, are we positive that it is free, at all time, of traces of that metal from previous operations; besides it labors under many serious disadvantages. First, that sulphuric acid; secondly, that metallic zinc, which are employed in the test, may, one or other of them, or even both, contain more or less of arsenic as an impurity, and thus the indications of that substance obtained may be due not to its existing in the suspected matter under investigation. I may add that it is difficult to get, in commerce, zinc and sulphuric acid perfectly free from arsenic.

The test proposed by Edmund W. Davy, professor of forensic medicine in the Royal College of Surgeons, of Ireland, is one of such simplicity, and has proved so practical in my hands that I would recommend it to the pharmacist desiring be to *Probus Paratus*, always ready, at the instant, to decide at once when life and death depend upon his knowledge, and is so easy of execution that it may be performed by almost any one, and found practical for the object stated, especially to those who are not conversant with the details of chemical manipula-

tion. It is a modification of Marsh's test, a well known method, and is founded on the circumstance that nascent hydrogen, in the presence of certain compounds of arsenic, will give rise to the formation of arseniuretted hydrogen; and thus very minute quantities of arsenic, under different circumstances, can be readily detected.

The modification used is the employment of an amalgam of sodium and mercury as a means of generating the hydrogen required for the test, and by the use of this substance do away with, altogether, the necessity of any acid, and employ two metals which are not liable to arsenical contamination. As to sodium, arsenic has never been pointed out as one of its impurities, and as to its presence in mercury, that is a circumstance of very rare occurrence; should it exist in that metal as an impurity, it can be readily removed from it by digesting the mercury in dilute nitric acid, and afterwards well washing it with water.

The amalgam found to answer best for the test consists of one part, by weight, of sodium to eight or ten parts of mercury, and is easily made by heating, moderately, in a test-tube, over a lamp, the mercury, and then adding gradually, in small pieces, the sodium, taking care to keep the mouth of the tube away from the face, if unprotected, lest some of that metal, in an ignited state, might be spurted out during the additions of the first portions.

The metals combine readily under these circumstances, forming an alloy that is liquid whilst hot, but becomes hard and brittle when cold. The contents of the tube, while still hot and liquid, are quickly poured out on a clean plate, when cool broken up for future use, and immediately placed in a stoppered bottle. The way to employ this amalgam is simply to place the suspected matter, or solution, along with a little water, in the bottom of a test glass or a tumbler; then add a small bit of amalgam, about the size of a grain of wheat; and, lastly, place, without delay, on the top of the glass a piece of white filtering paper or the cover of a white porcelain crucible, moistened with a drop of a dilute solution of nitrate of silver, slightly acidulated with nitric acid, when, if arsenic is present, a dull black or deep brown stain on the paper, or a dark silvery one on the porcelain, will be quickly developed in the part moistened, owing to the silver of the salt being reduced to a metallic condition by the arseniuretted hydrogen thus evolved.

The silver solution, found to answer well for this purpose, is made

by dissolving 20 grains of nitrate in an ounce of distilled water, adding 2 drops of nitric acid, to render the solution slightly acid. Exceedingly minute quantities of arsenic can be readily detected by this very simple process. Thus one-one thousandth part of a grain of arsenious acid dissolved in 1 cc. of distilled water gives a very decided effect in a few moments, and even a smaller quantity can be detected; as, for example, one drop of Fowler's solution in an ounce of water will indicate in a little time by the blackening of the silver salt. I may further state that the presence of organic matter seems to interfere but little with this test; for I have found that very minute quantities of arsenious acid, when mixed with considerable amounts of milk, tea, coffee, ale or porter, or flour, could, with almost the same facility, be detected by this method, showing the applications are very extended.

Antimony is the only metal which is capable of uniting with nascent hydrogen to form a gas (antimoniuretted hydrogen), which, coming in contact with nitrate of silver, produces black antimonide of that metal; and the blackening of the silver salt from the formation of that compound might be easily mistaken for the effect produced by the arsenical gas.

The fact, first pointed out by Fleitmann, that antimoniuretted hydrogen is not evolved (except, perhaps, as a mere trace) from strongly alkaline solutions, though the conditions may exist there for its formation, and as the action of the sodium amalgam is to render the mixture quickly alkaline, there will be only a very minute quantity of the antimony that may be present so evolved; and by previously rendering the mixture strongly alkaline, we may altogether prevent the evolution of that gas.

If, however, we make the mixture containing the antimony in solution first strongly acid, and then add the amalgam, or even acidify after its addition, the antimoniuretted hydrogen will be evolved in abundance, producing a deep black stain on the paper moistened with the nitrate of silver, and, for the purpose of this acidification, tartaric acid answers very well.

As the presence of alkalies in solution does not interfere with the evolution of the arsenical gas, this itself is a means of distinguishing the two metals, arsenic and antimony.

ADULTERATIONS.

By Rich. V. Mattison, Ph.G.

(*Read at the Pharmaceutical Meeting, Feb.* 20.)

Adulterations and sophistications are extensively practised. A large number of such articles are sold and used through the drug trade, and there is a certain demand among a large class of its members for cheap drugs, without regard to quality; the entire scrutiny being directed to the quantity delivered, and the price at which it is invoiced.

The apparently simple article of beeswax, for instance, is adulterated in every conceivable way, with almost every article at all analogous to it in physical properties. Paraffin, rosin, stearin and Japan wax, are employed, or a mixture of all these; the latest sophistication, we believe, being a mixture of rosin and paraffin, coated—electroplated as it were, with pure wax.

The fecula of arrowroot is perhaps rarely sold without admixture with other starches, and balsam of tolu and copaiba are so frequently adulterated as to need only mention in passing. The article known as Oregon Balsam of Fir has been one of peculiar interest, and the source of it was satisfactorily explained in the last number of the Journal, thanks to our friend Dr. Miller, who by the way, we think rather throws the blame of adulterations upon the Western trade. The firm mentioned as soaking off the labels of the easterm manufacturers of quinia, etc., and adulterating with cinchonia hydrochloate, salicin, etc., and who had also dies prepared and tinfoil caps made with the same design, letters and general facsimile style of the ones adopted by the Eastern manufacturers referred to, and who took the headings from barrels of borax and citric acid, partially filling the same with crushed crystals of alum and tartaric acid respectively, who also removed half the acid from the fifty pound boxes of tartaric acid, filing the same with cream of tartar which itself had been previously adulterated with calcium and potassium sulphates, and of whom a thousand more acts of a similar nature with which we are conversant might be mentioned, and who by the way are now out of business, were it is true a Western firm, but we think it due to their associates to say that when the exposé took place, they refused to have any dealings with the firm referred to, both openly and privately discountenancing the whole proceeding.

The Eastern trade is just as prone to this evil of adulteration as the Western or Southern. We have in our mind's eye a firm in our own city whom we doubt if ever shipped alcohol to their customers without the requisite quantity of water being added to furnish the desirable margin of profit. Chloroform is diluted with alcohol, spirit of nitrous ether with the same, cottonseed oil is sent out for "finest olive oil," as the article obtained from Olea Europea is evidently a myth in the minds of the proprietors. Concentrated glycerin is diluted with water and sold as "pure glycerin," oil of turpentine is invariably sophisticated with benzin, and flaxseed oil undergoes the same treatment. Tolu has the rosin dodge, and copaiba the castor oil device, and nothing leaves the establishment that can be tampered with without the same being done. In short, the whole history of the firm is one of sophistication, fraud and deceit; it is but a repetition of that of many others, and the disgrace to pharmacy lies not so much in the fact that the articles are adulterated as in the fact that the adulterated articles are sold openly and without question so long as they are a little cheaper than those sold by the trade regularly.

Now what is the remedy for this? It lies in a more liberal education, in the cultivation of a more liberal spirit toward the seller of drugs and other articles. Let us illustrate: a traveler visits the retailer in his regular rounds and offers, say bitartrate of potassium and calcined magnesium a few cents under the market price of these articles; the latter purchases the same and after seeing that the articles are of correct weight his responsibility ceases.

Does it cease? Unfortunately such is usually the case, but does not the fact that he has bought it under the market price of the same, rouse some suspicion as to its character? Is he not morally criminal until he satisfies himself of the purity of the article in question? Let it be understood that we do not object to anyone buying things cheaply. This in many cases is the secret of success, let everyone buy as cheaply as they can, but of course the smaller the margin of profit the greater the temptation to adulteration, and we do insist that no one has a right to purchase goods under market or at any price, for that matter, and dispense the same without examining them closely regarding quality.

Again it is very frequently the case that adulterated articles are dispensed by the retailer, with a full knowledge of this fact and without any compunctions of conscience.

The only remedy for this lies in a higher, broader more liberal education. It lies in breaking off from the humdrum every-day life of the shop, where the dispensing of senna and salts, chamomile and castor oil, manna and magnesia, and the endless routine of little things are apt to narrow one's ideas and make the need of a little relaxation through attendance at the pharmaceutical meetings, through the meetings of the Association, and through a large and liberal reading of the current pharmaceutical literature of the day an urgent necessity. Examinations by reagents, by physical characteristics, by the microscope, of all articles bought, whether from reputable parties or not, are imperative. No pharmacist should, and no thorough pharmacist will, ever place an article in his stock for dispensing without examining it; when adulterations are discovered make the fact known through the journals. Support the journals that are laboring for the advancement of the better interests of pharmacy, help them along liberally, encourage them by your subscriptions, your kind words and notes of interest. The editor of a journal needs encouragement just as much as an orator needs attention and interest to bring out his finest sentences, or an actor applause to make him forget himself and in his intense realization of his part, surpass his previous efforts. Remember, that in these days of strict economy the most lavish and reckless extravagance is to save the subscription price of a good pharmaceutical journal.

Philadelphia, February 10, 18777.

NOTE on the DETECTION of CASTOR OIL in COPAIBA.

By John M. Maisch.

(*Read at the Pharmaceutical Meeting, Feb.* 20.)

At the last meeting I incidentally remarked ("Am. Jour. Pharm.," 1877, p. 84) that the test for the detection of castor oil in copaiba by petroleum benzin, as proposed by Prof. Wayne, was fallacious. The test is recommended to be applied (*Ibid.*, 1873, p. 326) by shaking the suspected balsam with three times its volume of petroleum benzin, when, if castor oil be present, a milky mixture is stated to be formed, separating quickly into two layers, the lower containing all the castor oil. Having often repeated this experiment with different copaibas mixed with their own bulk of castor oil, an absolutely transparent solution was always obtained with three or four volumes of petroleum

benzin, and the solutions remained clear and free from sediment after standing for several days and even weeks. Mr. Chas. A. Bowman, however, informed me that with larger quantities of the benzin, a separation of the castor oil from the copaiba could be effected, and that capaiba alone would yield with sufficient petroleum benzin a turbid mixture from which a flocculent precipitate would subside.

On dissolving a pure copaiba in petroleum benzin, it was found that with eight measures of the latter the solution was perfectly transparent. On the addition of another measure of benzin, a slight turbidity occurred, which increased with more benzin, but it took nearly a week before the liquid became clear again, depositing at the same time some transparent resinous matter. When the same copaiba had been previously mixed with castor oil, it required the same amount of petroleum benzin to produce a turbid solution, from which, in the course of twelve hours, an oily liquid had settled to the bottom, equal in bulk to the castor oil employed. But in the course of several days the lower layer, containing the castor oil, had increased to more than double the volume.

It appears from this that petroleum benzin may be used for the purpose indicated, if not less than *ten* volumes are employed, instead of *three*, as originally proposed by Prof. Wayne. But it must not be overlooked that pure copaiba will also produce a turbid, though less opaque solution, and its separation and the examination of the lower layer may become necessary, unless a sufficient quantity of the castor oil, to be remunerative to the sophisticator, had been added, in which case the dense milkiness will at once indicate it.

Different kinds of copaiba will be found to be of somewhat different behavior. A sample has been handled by Mr. Bowman, which, with *six* volumes of the benzin, became turbid and *readily* separated floccules, while another, as stated before, acquired its maximum turbidness with *ten* measures of benzin, and *slowly* deposited a transparent resin; another kind, a Para copaiba, over 16 years old, required fifteen measures of benzin before a slight turbidity was produced, and even after it had been mixed with its own bulk of castor oil, the amount of benzin mentioned did not disturb it to a very appreciable extent. Professor Wayne, having operated with a sample from which the castor oil was separated by *three* measures of petroleum benzin, it is evident that the variations are very considerable, and it is not impossible that still greater ones may be observed with other kinds of copaiba.

TINCTURA OPII DEODORATA.

By Theod. G. Davis.

Much has been written about opium and its preparations, particularly this, the most elegant of all, yet I trust I am not presuming in giving the following, my favorite mode of manipulating.

The proportions used are the same as in the "Pharmacopœia" process, except of alcohol, of which double the amount is used.

Boil the opium, with twelve fluidounces of water, for half an hour, and strain, with expression, through muslin; boil the residue with eight fluidounces of water for fifteen minutes and again express; repeat the same operation with four fluidounces of water; mix the expressed liquids, evaporate to four fluidounces, when nearly cold add, gradually, with agitation, eight fluidounces of alcohol (to precipitate gum, starch, pectin, etc.), filter, washing the filter with alcohol, and evaporate to four fluidounces (the alcohol may be recovered by distillation); when cool, finish by shaking with ether, etc., as directed in the "Pharmacopœia" process, which requires *four* days before a finished product is obtained, while by the proposed process *one* day is sufficient in which to obtain a preparation more elegant in appearance and more completely *deodorized* than any I have been able to prepare when following the officinal directions.

VARIETIES.

An Ancient Metrical System.—From the library of Sardanapalus, King of Assyria (found by Layard at Niniveh), it is proved that the Assyrians, some 3,000 years ago, had a system of weights and measures almost as philosophical and methodical as the French metrical system, all the units of surface, volume and weight being derived from a single linear unit. The base of the system was the cubit or elbow (equal to 20·67 of our inches). These cubits, multiplied with 360, gave the stadium, measure for great distances. The fundamental unit of surface was the square foot (foot equal to three-fifths of the cubit). The cubic foot constituted the metreta (bushel), which, with its sub-divisions, was the standard of all measures of capacity. A metreta of water was the talent, the unit of all measures of weight. The sixtieth part of the metrita gave the mine, and this divided into sixty parts the drachm. The weight of the metrita (or bushel, water) was about 70 avoirdupois pounds, the mine about 18·7 ounces, and the drachm about 159 grains. The sexagesimal system appears to have been used in all these calculations, and is evidently a very practical one, combining the advantages of the decimal and the duodecimal systems.—H. M. W. from *Manuf. and Build.*

Yerba santa, the leaves of Eriodyction glutinosum, have been used by Dr. Gabel, of Aurora, Ill., in several cases of bronchitis with very good results. The preparation employed was a saturated tincture made with 70 per cent. alcohol, and given in doses of 15 minims or less, combined with glycerin, three or four times a day. It is stated that the agent is a remedy in *atonic* conditions only, and that in inflammation it is worse than useless.

Cancer Remedies.—Dr. J. L. Horr, of Cumberland Mills, Me., states in the "Bost. Med. and Surg. Journ.," Oct. 5, 1876, that the late Dr. Lombard, formerly famous in that region as a "*cancer doctor*," applied the inspissated juice of Phytolacca decandra in the form of a plaster until sloughing took place, using afterwards a simple dressing like simple cerate. For large tumors a paste composed of chloride of zinc and powdered sanguinaria was employed until an eschar was produced, after which the same plaster was used.

Preservation of Syrup of Iodide of Iron.—H. F. Meier, in the "Druggists' Circular," Dec., 1876, proposes for this purpose the addition of some hydriodic acid, which he prepares by dissolving 153 grains of pure tartaric acid in 4 fluidounces of alcohol, adding to a solution of 166 grains of potassium iodide in 2 fluidounces of water, filtering from the precipitated potassium bitartrate and evaporating the filtrate to 2 fluidounces. Each fluid drachm contains 8 grains of anhydrous acid, and is stated to be sufficient to preserve at least 4 pounds of this syrup.

Carbolated Camphor, recommended by Dr. Soulez, in the "Bulletin de Thérap.," is made by dissolving 25 grams of camphor and 9 grams of crystallized carbolic acid in one gram of alcohol. It forms pale yellow, oily liquid, having a slight odor of camphor, miscible in all proportions with olive and almond oils, and solidifying when heated to boiling and then thrown into cold water.

Iodized phenol is recommended by Dr. Rob. Battey, of Rome, Ga., as a new uterine escharotic and alterative. It is prepared by combining with a gentle heat half an ounce of iodine with one ounce of crystallized carbolic acid. The preparation is solid in cool weather.

For some purposes, a preparation containing more carbolic acid has been found serviceable; it is made by mixing $1\frac{1}{2}$ oz. iodized phenol, 1 oz. crystallized carbolic acid and $\frac{1}{4}$ oz. water; this preparation is permanently liquid.—*Amer. Pract.*, Feb.

New Anæsthetic Agent.—Rabuteau, in a memoir read before the Académie des Sciences, states that he has investigated the physiological properties and mode of elimination of hydrobromic ether. He has satisfied himself that this anæsthetic agent, which possesses properties intermediate to those of chloroform, bromoform and ether, might be advantageously employed to produce surgical anæsthesia. The hydrobromic ether is neither a caustic nor an irritant. It can be ingested without

difficulty, and applied without danger, not only to the skin, but to the external auditory meatus and to the mucous membrane. It is eliminated completely or almost completely by the respiratory passages in whatever way it may have been introduced into the system.—*Med. and Surg. Rep.*, Feb. 24.

Phosphorus pills are prepared by Thos. Haffenden, by fusing the phosphorus under a little mucilage in a dish placed in a water-bath, then stirring to form a kind of emulsion, after which the powder to form the pills is rapidly but carefully stirred in with a small spatula, care being taken to keep the mass together, otherwise, if spread on the warm sides of the cup, the phosphorus is apt to catch. When well mixed together, they may be put in a mortar and worked up in the usual way.—*Phar. Jour. and Trans.*, 1876, Sept. 23.

E. J. Appleby has experimented with cacao butter, tolu balsam and resin as excipients for phosphorus, and finds that with the first named, the mass requires some time and patience to prepare, and must be divided into pills and coated at once. The phosphorized tolu balsam is difficult to incorporate with other ingredients, and pills made from it soon lose their shape, and are with difficulty soluble in water. Phosphorized resin on the contrary is easily prepared, and may be kept under water for any length of time. It can be quickly reduced to a fine powder, and easily made into a pill mass.—*Ibid.*, Oct. 7.

MINUTES OF THE PHARMACEUTICAL MEETING.

FEBRUARY 20th, 1877.

The meeting was organized by electing Robert England tothe chair; A. W. Miller officiated as Registrar, *pro temp.*

James T. Shinn rose to explain that his remarks, as recorded in the minutes of the last meeting, were not intended to cast reflection on physicians themselves, but related only to the very great variation in the size of the conventional domestic measures for administering medicines, which must of necessity produce marked discrepancies in the division of the doses of liquids.

Prof. Maisch presented a pamphlet received from Dr. E. R. Squibb, entitled "The American Medical Association and the Pharmacopœia of the United States of America."

Prof. Maisch stated that he had recently been informed that in the Prussian army, even when in actual service in the field, the compounding of prescriptions is done only by weighing, the use of measures of capacity being almost entirely prohibited.

A. W. Miller presented a specimen of oil of cubebs, prepared by percolating the ground drug with light petroleum benzin, permitting this to evaporate spontaneously, and then subjecting the residue to distillation. The product was entirely free from all odor of petroleum. About 3 lbs. of essential oil were obtained from 25 lbs. of the drug, and about 20 ounces of resin, fatty oil, etc., were left in the still.

E. Gaillard read an interesting paper on a new and convenient method of detecting arsenic by the use of an amalgam of sodium. (See page 126.) His remarks were illustrated by the practical application of the test to liquids to which arsenious anhydrid and tartar emetic had been added. In connection with this subject, Prof. Maisch stated that solutions of nitrate of silver are not affected by light, in support of which assertion he exhibited a solution made by himself eight years ago, which was still perfectly clear. He explained that the decomposition of the argentic salt, when it does occur, is due to the presence of organic matter. James T. Shinn inquired as to whether with the frequent introduction of camel hair pencils, sponges or the like, reduction would not proceed more rapidly in the light than in the dark. Prof. Maisch replied that reduction would take place in either case, but possibly under these circumstances somewhat more tardily in the dark than in the light.

James T. Shinn presented a cake of Joseph L. Lemberger's pure beeswax, moulded in such a manner as to be readily broken into squares each weighing one ounce. E. M. Boring rose to state that he was an advocate of home manufactures; he had tried Lemberger's process of hot filtration through paper, but had not succeeded well with it; he had, however, found simple straining through muslin to furnish a satisfactory article, provided proper care was exercised in selecting the crude beeswax. James T. Shinn, on the contrary, expressed satisfaction in being relieved by one so reliable as Joseph L. Lemberger of the tedious, disagreeable and dirty labor of refining beeswax so as to fit it for use in pharmacy.

A. W. Miller presented a specimen of so-called berry wax, the product of *Myrica cordifolia*, from Cape Town, Africa. The wax is of a dull greenish color, closely resembling in its general appearance the myrtle wax of this country.

Prof. Maisch read a note on the detection of castor oil in copaiba, and illustrated the subject by several experiments. R. V. Mattison stated that he had also tried the petroleum tests for copaiba, but had become quite confused by them. Prof. Maisch said that so far aqua ammoniæ was still the best test; he attributed the perplexing variation in the behavior of the copaiba to its production from different botanical sources.

In accordance with the instructions of the last pharmaceutical meeting, A. W. Miller had expressed the thanks of the College for the valuable donations made by the late Prof. Carson. He read the following communication, which he had received in reply:

JANUARY 25TH, 1877.

MY DEAR SIR—Permit me to acknowledge the receipt of your favor of yesterday, conveying the thanks of the Philadelphia College of Pharmacy for the presentation through Professor Remington. The interests of the College were always near my father's heart, and I am personally much gratified at the disposition made.

Very sincerely yours, HAMPTON L. CARSON.

R. V. Mattison read a paper on adulterations of drugs and chemicals (page 129), making serious charges against some of the wholesale dealers. As the statement had been made that adulterations were far more common in our country than elsewhere, Prof. Maisch explained that adulterated articles were found everywhere, and not only in America; that, for instance, resin of jalap which had never seen jalap was frequently offered in Europe. He maintained that we here had, in fact, one advantage over Europe, in so far that with us everything is at once published far and wide, while

abroad the tendency is rather to keep matters of this kind secret, as a sort of public disgrace. Prof. Remington related having had submitted to him several months ago a specimen of ground gentian, purchased from a wholesale druggist of this city, which on examination proved to be almost pure saw-dust. Prof. Maisch improved the opportunity by directing the attention of the students present to the necessity of the careful study of prosenchymatous and parenchymatous tissues, which in this case would alone be quite sufficient for the recognition of the substitution. A. W. Miller stated that there was a manufacturer of ground gentian in this city who made no pretence to sending out a pure article, merely claiming that his compared favorably with that furnished by other establishments.

E. Gaillard called attention to the process of bleaching sponges, as described on page 399 of the "Am. Jour. Phar." for 1875. He had tried it with very satisfactory results, and exhibited a number of specimens bleached in this manner, and with permanganate of sodium in place of the potassium salt. He used a very dilute hydrochloric acid (one ounce to the gallon) to remove the calcareous matter, without injuring the texture of the sponge. The process possesses another advantage in altering the coloring matter permanently, while the old method, using hyposulphite of sodium and hydrochloric acid, bleaches only temporarily.

James A. Maston exhibited a piece of compressed camphor, and invited the members of the College to visit the establishment of Wm. F. Simes & Son, to witness the manufacture of this article.

Prof. Remington directed the attention of the meeting to the large assortment of specimens obtained from the commissioners of various governments at the late Exposition. He exhibited samples of cream of tartar, tartaric acid and argols; sulphur earths, Italian proprietary medicines, effervescent granular salts, fine Austrian essential oils, German anilin products in great variety, Schering's pyrogallic acid and salicylate of sodium, etc.

ADOLPH W. MILLER, Registrar *pro temp.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The Philadelphia College of Pharmacy has adopted the recommendation of the Conference of Schools of Pharmacy, and introduced, near the close of the last session, an examination of first course students, of which seventy of the latter availed themselves. The participation of the students, the results attained in this instance and the opportunity thus afforded not only of finding out to what extent the students had profited from the instruction, but also of specially advising them of deficiencies, appear to be regarded so favorably by the Examining Committee and Professors, that such a *junior examination* will undoubtedly be held annually hereafter. Twelve specimens were placed on the table for recognition, and answers, in writing, to the following questions required:

1. What compound is formed by the combustion of Charcoal? Give the method by which it is usually obtained and collected for experiment or use. What are its properties, composition, effects on living animals and general names of its metallic compounds?

2. What is the Muriatic Acid of the "U. S. Pharmacopœia?" How is it prepared and what are its properties and officinal specific gravity?

3. What is the proper chemical name for Green Vitriol? Describe and explain a method by which it can be obtained, and give an account of its properties and the changes it undergoes when exposed to the air.

4. Describe the conditions and manner of the formation of Vegetable Cells.

5. Name the integuments of Seeds, and explain briefly the different parts of the Kernel.

6. Which drugs of animal origin consist mainly, and to what extent, of Carbonate of Calcium?

7. Define Specific Gravity, and state how you would obtain the Specific Gravity of a piece of lead weighing 200 grains.

8. State, in a few words, what the difference is between a Decoction and an Infusion, a Cerate and an Ointment, a Tincture and a Fluid Extract.

9. What Liquid officinal principle, soluble in water, is obtained from fats? Mention some of its uses in Pharmacy, and describe its appearance.

10. From what Country is Rhubarb obtained? Where does it grow? What Calcium Salt in large proportion does it contain? How may the presence of this Salt be known? What Organic Acids does it contain?

11. State the number of grains in an Avoirdupois pound, an Avoirdupois ounce, a Troy pound and a Troy ounce, and give the weight, in grains, of a Fluidounce of distilled water.

12. Give the formula for making Liquor Calcis. State whether hot or cold water should be employed, and the reason why. If left exposed to the atmosphere what effect will be produced? What is a test for it?

The Alumni Association of the Philadelphia College of Pharmacy held a meeting February 1st, President Kennedy in the chair, about fifty members being present. After reading of the minutes, specimens were handed to the students for examination.

Mr. Kennedy submitted a small and curiously-shaped vial, containing a few drops of Chinese oil of peppermint, which was quite thick and differed considerably from the domestic article in odor.

Mr. Jones presented handsome specimens of the iodides of lead and mercury and ferrocyanide of iron, made by a first course student of the college.

Mr. Kennedy referred to a plant found in Nicaragua, named phytolacca electrica, which is said to possess very pronounced electrical properties, sensibly benumbing the hand upon touching it; the magnetic influence is asserted to be felt at a distance of seven or eight feet and the intensity to vary with the hours of the day, being hardly perceptible at night, while attaining its maximum about 2 P. M.

Dr. Miller spoke of the hieroglyphic signs occasionally used in prescriptions, tracing back these symbols to their alchemical origin. Copies of these signs, with their explanation, will be furnished gladly to any applicant to A. W. Miller, M.D., Third and Callowhill streets.

Mr. Moorhead read a paper on glycerol of nitrate of bismuth (see p. 98), and submitted a specimen.

Mr. H. Lerchen reported that an examination of the solution and residue

obtained by treating a rubber nipple with nitric acid showed the presence of zinc and calcium, but no lead.

After a description of the electrical pen, as used by their firm, Dr. Miller mentioned a lot of powdered catechu, obtained from New York, which yielded very little extractive matter to either water or alcohol, and when ignited gave 50 per cent. of ash.

Maryland College of Pharmacy.—At the business meeting held in January Dr. J. B. Baxley, who has served the college long and faithfully as Treasurer and Dean, tendered his resignation as an officer of the body, which was accepted with many regrets.

The following officers were elected for the ensuing year: Jos. Roberts, President; Wm. Silver Thompson and Wm. H. Osborn, Vice Presidents; Wm. E. Thornton, Treasurer; Louis Dohme, N. H. Jennings and F. Hassencamp, Board of Examiners; Edwin Eareckson, Secretary.

At the Pharmaceutical Meeting held February 8th, the leading feature was a very animated and interesting discussion on the "U. S. Pharmacopœia," and the propriety of admitting, to at least a semi-officinal position in that work some of the elixirs and other new-fashioned preparations of the day. Many of the leading members advocated the measure, on the ground that a number of such preparations have become standard remedies with practitioners, and their use is likely to increase rather than diminish, hence it would be far better to have a regularly recognized formula for their preparation, so as to insure uniformity of strength, flavor and properties. The merits of the metrical system were also freely discussed, the members generally expressing their readiness to adopt the method whenever required.

The Connecticut Pharmaceutical Association held its Second Annual Meeting at New Haven, February 8th, Mr. N. Dykeman presiding. About fifty new members joined the Association; efforts were set on foot to secure protection from burdensome taxation; delegates to the National Association were appointed, and the following officers elected: N. Dikeman, of Waterbury, President; Henry Woodward, of Middletown, and A. F. Wood, of New Haven, Vice-Presidents; Alfred Daggett, of New Haven. Secretary; George P. Chandler, of Hartford, Treasurer; Executive Committee, L. I. Munson, of Waterbury, Dwight Phelps, of Winsted, E. S. Sykes, of Hartford; Committee on "Progress of Pharmacy," Samuel Noyes, of New Haven, Samuel R. McNary, of Hartford, F. S. Stevens, of Bridgeport.

EDITORIAL DEPARTMENT.

Pills.—The present number contains a long and exhaustive paper on this subject from the pen of Mr. J. B. Moore; although, according to its heading, it has been written in defence of one particular variety of this form of medication, it aims to

prove that there can scarcely be any variety of coated or uncoated pills, if made with due caution, which would not dissolve in its passage through the stomach and intestines. Experiments undertaken with a view of testing the solubility of the various kinds of pills have only, and we believe were never claimed to possess any other than a relative value, in so far as they enable us to judge, not of the *absolute*, but of the *relative* length of time in which they are likely to produce their medicinal effects. We are an advocate of home productions, and believe that pharmacists should make, as nearly as possible, *all* pharmaceutical preparations in their own store or laboratory, even though some of them may cost rather more than similar preparations as found in the market. If due attention be paid to the quality of the raw material and to the processes, it cannot but be a satisfaction to the pharmacist and a source of gratification, to feel assured of the quality and effectiveness of all preparations dispensed by him, aside from the consideration that by adopting such a course many otherwise idle minutes would be usefully filled up and occasions for practical experience afforded in which many apprentices and assistants are very deficient.

We favor, partly for the reasons stated, the uncoated pill; at the same time we do not lose sight of the fact that the taste of such pills is often repulsive to many patients, and that others are unable to swallow medicines in that form, and to them a coating which hides the odor and taste is quite a boon. Formerly such coatings were, and are still, to a limited extent, made by the pharmacist; but the improvements made in the processes and apparatus, as worked on the large scale, has very nigh put this labor altogether into the hands of the wholesale manufacturer, whereby an elegance of appearance has been attained which is unapproachable by the means at the command of the dispenser. It seems, therefore, what we need is the construction of apparatus, of limited cost, which would enable the pharmacist to furnish the pills of the same elegance as the manufacturer, and to this point should be turned the attention of our inventive pharmacists. The construction, by Prof. Remington, of an improved pill press, for the preparation of compressed pills, which was described in our last volume, was such a step, and we trust that the time may not be far distant when apparatus for coating pills with desirable materials may likewise be in the hands of the dispenser.

As to the nature of the coating, we believe that not only the inclinations of physicians but likewise the tastes of patients will ever differ, and the pharmacist should therefore be prepared to furnish, at short notice, pills elegantly coated with sugar, gelatin or licorice, the last-named material having been recently recommended for that purpose.

Regarding the heat to which pills, while being sugar-coated, are subjected, we believe that its effects have been greatly over-rated, as in the outcry against the employment of moderate heat, raised some years ago, in the preparation of fluid extracts and extracts. Of course we admit that there *is* a possibility of spoiling by the injudicious application of heat almost any organic material kept in the drug store; but there are points in every process which, if neglected, will tend to vitiate the results.

A Pharmacy law in Maine has been recently passed, and received the sanction of the Governor February 9th. According to its provisions the Governor has to appoint three *suitable persons* to be commissioners of pharmacy, who are to examine every applicant desiring to engage in the business of an apothecary; said applicant must have been employed in an apothecary store where physicians' prescriptions are compounded, at least three years, or must have graduated from some regularly established *medical school* or *college of pharmacy*, and be *competent for the business.* The act does not apply to physicians putting up their own prescriptions or to the sale of proprietary medicines.

The law seems to be wisely framed, if by the suitable persons mentioned above, pharmacists are understood. The power of the board to inquire into the *competency* even of graduates appears to be very judiciously conferred, since several concerns have been established, here and elsewhere, where pharmaceutical diplomas may be obtained without putting the searcher after such honors to any trouble of studying, or requiring of him any practical experience.

A Fatal Mistake occurred recently in this city, in consequence of which a young lady died after suffering great agonies. It appears that the victim sent to a drug store for a dose of castor oil, to be prepared so that it could be readily taken. The shop bottle containing hydrochloric acid was placed near the one containing mint water, and the former liquid was used for the mixture in place of the latter, the mistake not being discovered until nearly the whole contents of the tumbler had been swallowed. Although vomiting took place and antidotes were administered, the corrosive poison did its fatal work, and the druggist who made the mistake is now awaiting the action of the grand jury.

This is one of those cases the occurrence of which would have been impossible if the poisonous articles had been kept in a place entirely separate from the non-poisonous drugs and preparations, and should be a warning to those who still follow that practice. The pharmacist has to be constantly on the alert, and simple prudence alone should dictate a separation of the milder and more powerful remedies.

Bogus Degrees.—We learn from several European journals that an enterprising fellow advertises in some German papers, offering academical degrees *in absentia*, to be applied for under an address in Jersey, England. The "Chemical News" calls attention to this, and states that the degrees offered emanate from the "University of Philadelphia." We think that it should be pretty well known in Europe by this time that such an institution has no existence in this city; and if there are still dupes to be found who spend their money for a worthless piece of paper, it would be but charity and commiseration with such child-like simpletons to inform them once more of this fact, and that the frauds who are at the bottom of this rascality have not the slightest connection with the *University of Pennsylvania*, in this city.

Correction.—The statement on page 88 should read that Miss Clara Marshall fills the chair of Materia Medica at the Woman's Medical College, and instructs the lady students in pharmacy during the spring term.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Microscopist, a manual of microscopy and compendium of the microscopic sciences, micro-mineralogy, micro-chemistry, biology, histology and pathological histology. By J. H. Wythe, A.M., M.D., Professor of microscopy and biology in the Medical College of the Pacific, San Francisco. Third edition. Philadelphia: Lindsay & Blakiston, 1877. 8vo, pp. 259. 205 illustrations. Price, cloth, $4.50.

The evident object of the work before us is not to take the place of such standard works as Beale's, but to serve as a guide to the beginner and advanced student, and as a handy work of reference and consultation even to the expert, as well as a means to indicate the direction in which investigations are to be undertaken. After a brief chapter on the history and importance of the microscope, its various forms and accessories, its use, the methods of examination and the mounting and preservation of microscopic objects, are considered and followed by dissertations upon its use in the various branches of science enumerated on the title page. Aside from the first six chapters, which contain the general instructions for the student in microscopy, the chapters on the use of the microscope in chemistry and in vegetable histology and botany are those of paramount importance to the pharmacist, and in several others he will find much that is useful to him in deciding questions that are likely to be submitted to him. Although the work was not specially written for pharmacists and druggists, yet we feel assured that they can use it with profit, and that it will aid them in entering and cultivating a field of examination and research which has hitherto been rather neglected. As a further recommendation for the work, we may state that it has been gotten up in an excellent manner, and that not only the text, but also the illustrations, are all that can be desired.

Chemical and Pharmaceutical Directory, of all the chemicals and preparations (compound drugs) now in general use in the drug trade; their names and synonyms alphabetically arranged. By John Rudolphy. Chicago, 1877: John Rudolphy. Large 8vo, pp. 407. Price $5.00.

The work is divided into three parts: 1. English, Latin, German; 2. Latin, German, English; 3. German, Latin, English, and in its general arrangement is similar to the Pharmaceutical Directory, published by the same author a number of years ago. In the three parts the subjects are arranged, as far as chemicals are concerned, under the names of the bases, while the pharmaceutical preparations have been arranged in classes, such as tinctures, extracts, cerates, etc. The old nomenclature has been adopted for the chemicals, but has not been consistently carried through. Thus we find kali bromatum, kali jodatum, etc., instead of kal*ium* bromatum, kal*ium* *i*odatum, of the "German Pharmacopœia," and similar inconsistencies are noticed in the English names. Though generally correct, some errors are observed in the translations. Thus, on page 220, natrum chloratum and natrum chloratum liquidum are translated with soda *chlorate* in English, and in the German with the equivalent for soda *hydrochlorate,* while according to the nomenclature of the "German Pharmacopœia" it should be *chloride of* or *chlorinated* soda. Under liquor natri chlorati, the translations are correct. In some instances the

popular English names are not given, as in the case of tinctura rhois radicantis, which is translated tincture rhois radicans; instead tincture of poison sumach, poison vine, or poison oak.

Generally, the Latin names are those adopted by the "German Pharmacopœia," or as met with in German pharmacy. We find chininum, chinidinum, etc., but not quinia or quinidia; kali aceticum, chloricum, etc., but not potassii acetas, chloras, etc.; and thus we find expressed the aim of the work to be a dictionary of the pharmaceutical and chemical terms as used by German physicians and pharmacists, and in this respect it is very complete. In our examination we have not found missing any of the important synonyms, even of older date, which are occasionally employed in prescriptions, or met with in medical and pharmaceutical works. The work will be found a valuable hand-book, and of great service to pharmacists, druggists and physicians.

The American Medical Association and the Pharmacopœia of the United States of America. By Edward R. Squibb, M.D. Brooklyn, 1877. 8vo, pp. 59.

The pamphlet consists of extracts from the minutes of the American Medical Association, the American Pharmaceutical Association and the Kings County Medical Society, of an account of the Proceedings of the New York College of Pharmacy, and of a proposed plan for the future management of the "U. S. Pharmacopœia," to be submitted to the American Medical Association at its annual meeting in Chicago, in June, 1877. It is especially addressed to those bodies which were represented in the national convention for revising the "Pharmacopœia," and which are represented in the American Medical and in the American Pharmaceutical Association. The plan proposes such a radical change that it is eminently desirable that the various bodies alluded to should take it into careful consideration and act officially upon the suggestions.

The Vermont Medical Register for the year 1877. Edited by Chas. P. Thayer, M.D. Burlington, 1877. 12mo, pp. 120.

Lists of physicians, dentists, druggists and dealers in drugs and nurses, also lists of the educational, medical, dental and pharmaceutical institutions in the United States and of the charitable institutions of Vermont are found in this little book, together with laws of that State, relating to various sanitary, etc., matters, and other information of interest to the physician and pharmacist. Among the pharmaceutical institutions enumerated, we find two formerly connected with medical colleges, which have been discontinued since the establishment of a College of Pharmacy in Washington; at least two in which lectures have never been delivered, and two or three which are of equivocal existence, while on the other hand the second oldest College of Pharmacy in the United States, that of New York, has been omitted.

Emmons' Annual Medical Directory of Regular Physicians in the State of Illinois, for the year 1877. Chicago: F. A. Emmons, M.D. 12mo, 109 pages.

This Register is arranged alphabetically by towns and by the names of the physicians, and contains also a list of the U. S. Pension Examining Surgeons in Illinois.

The Naturalists' Directory, containing the names of Naturalists, Chemists, Physicists and Meteorologists, arranged alphabetically, with an index arranged according to Departments. By Samuel E. Cassino. Salem, Mass., 1877. 8vo, pp. 80.

The aim and arrangement of this Directory is sufficiently explained by its title; intended to embrace the Naturalists of the United States and Canada, it will prove useful to all engaged in those pursuits.

The reception of the following pamphlets is hereby acknowledged:

Milk Analyses. By S. P. Sharples, S.B. Reprint from the Proceedings of the American Academy of Arts and Sciences.

Note on the Administration of Phosphorus. By E. R. Squibb, M.D. From the Proceedings of the American Pharmaceutical Association.

Liebig's Extract of Malt and its Chemical Composition, Manufacture and Therapeutical Uses. By F. D. Davis, M.D. From the Transactions of the American Medical Association.

Untersuchungen aus dem Pharmaceutischen Institute in Dorpat. Researches from the Pharmaceutical Institute in Dorpat. Communicated by Prof. Dragendorff. Reprinted from "Archiv der Pharmacie."

OBITUARY.

Dr. Johann Christian Poggendorff, Professor of Physics at the University of Berlin, died there January 24th. He was born at Hamburg, December 29th, 1796, and when in his sixteenth year entered a pharmacy as an apprentice and afterwards served as assistant until 1820, when he matriculated at the University of Berlin, following his favorite studies, chemistry and physics. Already in 1821 he published an important essay on the magnetism of the voltaic pile, in which he described the electro-magnetic multiplicator. In 1824 he became editor of the "Annalen der Physik und Chemie," known in the scientific world as *Poggendorff's Annalen*, which he continued to edit until his demise. The celebrated *Handwörterbuch*, a chemical dictionary, was commenced in 1837, Liebig, Wöhler and Poggendorff being the editors. A history of the exact sciences, from his pen, was published in 1839, and a biographical and literary dictionary to the history of the exact sciences in 1863. The deceased was appointed professor in 1834, and in 1838 was elected a member of the Berlin Academy of Sciences. His numerous contributions to science were published in his "Annalen."

William G Schmidt died at Louisville, Ky., January 11th, after a very brief illness, aged 38 years. He had been in business there for a number of years, and was highly esteemed for his enterprise and honorable dealing, and for his public worth as a citizen. In the inception and organization of the Louisville College of Pharmacy he was a leading spirit and faithfully served that institution in various capacities, having, to the last, a deep interest in, and solicitude for, the advancement of its prosperity. He was a member of the American Pharmaceutical Association, and, at the meeting in Louisville, as a member of the local committee, labored incessantly to make the sojourn of the visitors both pleasant and profitable.

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APRIL, 1877.

NOTES ON THE JOYOTE OF MEXICO.

By Professor Alfonso Herrera, *Member of the Mexican Society of Natural History.*

In the damp, hot regions of the fertile mountains of the great Mexican Cordillera grows a tree remarkable for its thick foliage, elegance and beauty of its golden colored flowers, and the uncommon form of its fruit. The Aztecs called it *Joyotli*, hawks-bell, on account of the use they made of the nuts as bells, but others say that it takes its name from the property of the seeds to cure the bite of the Crotalus, rattlesnake; and the wise physician, Felipe II., says: "The ancient Mexicans made use of the milky juice that the tree produces in abundance, for curing deafness and cutaneous diseases. They applied the leaves topically in toothache, and as an emollient and resolvent to tumors, and lastly, they used the fruit to heal ulcers."

At present the fruit is called huesos ò codos de fraile, bones or friar's elbow, perhaps for its resemblance to the human elbow. Among the people these seeds have a great reputation in hemorrhoids, and are applied topically after being triturated and mixed with suet.

The joyote is the *Thevetia yccotli*,[1] De C., Cerbera thebetioides H. B., nat. ord. Apocynaceæ tribe Carisseæ, an elegant tree whose numerous branches are covered with a greenish silver-gray epidermis, with gray wrinkles, longitudinal furrows and protuberances somewhat spirally arranged; its leaves are sessile, linear, acuminate, dark-green above and pubescent and of a lighter color beneath, with some prominent transverse veins; the margin is entire and revolute; size, fourteen centimeters long and seven millimeters wide. Inflorescence cymose, calyx five-parted, lobes lanceolate, acuminate and beardless, corolla salver-shaped, pubescent in the lower part of the tube and throat, the

[1] Hernandez has corrupted the word *Joyotli* of the Aztecs into *iccotli*, and De Candolle used the latter as the specific name of this plant.

tube widened above to bell-shape, the throat with five ovate appendages covered with white hairs; beneath are the stamens alternating with the lobes of the corolla; anthers sessile and lanceolate, opening with two lateral fissures. Ovaries two, united at the basis and free above, flat on the face and convex on the back, unilocular and biovulate, united on top by a fleshy ring with five incisions alternating with the lobes of the calyx. The stigma is black, head-shaped, with ten ribs at the base and a bi-lobulate conical top. The ovules are amphitropous, sub-globular, of parietal placentation, equi-distant between the base and top of the ovary. Drupe ovoid-globular, green, with a large crest about the middle, extending to near the base, but more prominent above, and with a slight furrow, and terminating in two small nipples on each side. Epicarp smooth and green; mesocarp greenish-white, very laticiferous; endocarp woody, of a dirty yellow color, and the same form as the fruit, provided with a complete woody partition in the direction of its small diameter, and with two false ones in the other direction; corresponding with the latter towards the apex is a furrow, and near the base another one, corresponding to the true partition. Seeds four, commonly two abortive, inserted near the middle of the false partitions, on the margin with a small wing; spermoderm thin and papery, endopleura distinct and reticulate. Albumen none, radicle eccentric, horizontal, conic and short; cotyledons orbicular, unequal and oily, the internal surface transversely wrinkled; near the centre in the direction of the radicle a prominent crest; flowers in July.

Mr. Berlandier found, near Tampico, a variety of this species, to which he gives the name of *glabra*, because it has smooth leaves. We have also the *Thevetia ovata*, *D. C.*, which is readily distinguished by its ovate-elliptic leaves, white-tomentose on the under surface. Somewhat westward the *Thevetia cuneifolia* is found; its flowers are called *Meriendita*. The variety *anclieuxi* is found about Tonatepec. All these species and varieties are commonly known only by the vulgar name given above, but in the State of Talisco they are called *Narcisos amarillos*.

The excessive acrimony of the seeds of the joyote attracted my attention, and induced me to investigate them. The small quantity at my disposal and other circumstances have prevented a fuller investigation, but incomplete as it may be, it may well serve as a basis for further observations.

The seeds of the joyote were conveniently divided, and by pressing in a common press, yielded 40 per cent. of oil resembling almond oil; its density at 20°C. is 0·9100; at 10° it becomes turbid, and at 0°C. it acquires the consistency of common lard. Concentrated sulphuric acid imparts a yellow, changing to rose color, and afterwards into deep orange-red; it is a non-drying oil, and appears to be composed of olein and palmitin. The residual powder was percolated with ether, and the liquid evaporated left a residue of about the same quantity as the oil previously obtained. Distilled water was afterwards used to extract albuminous and extractive matters, and finally the exhausted substance was treated with 85 per cent. alcohol. The filtered liquid was evaporated expontaneously, and yielded a white substance, crystallizing in four-sided prisms. These crystals were inodorous, but excessively acrid, insoluble in water, and very little soluble in ether, bisulphide of carbon, fixed and volatile oils; but easily soluble in alcohol; not volatile, and not combining with acids or bases. When treated with dilute sulphuric acid, they decompose into glucose and a resinoid substance; the principle is, therefore, a glucoside. Its solution is not affected by nitrate of silver, the chlorides of platinum, gold or iron, iodide and iodate of potassium, tannin, potassa, ammonia, the alkaline carbonates, or by ferro- and ferrid cyanide of potassium. I propose to call it *thevetosin*, although *thevetin* would probably be a more appropriate name for this principle.

In closing this paper, I must thank our distinguished toxicologist, Mr. Hidalgo Carpio, for his interest in making the physiological experiments detailed below; also, Mr. M. G. Reinoso and C. Morales, for the flowers and fruits provided for this investigation.

Luis Hidalgo Carpio's Experiments with the Active Principle of the Thevetosa Iccotli (Codo de Fraile) Seeds.—On the 8th of June, 1871, three large pigeons received sub-cutaneous injections of a small quantity of thevetosin, dissolved in a little alcohol. After fifteen minutes, they made some convulsive motions, opening their bills from time to time as if they wanted air; afterwards they passed to a comatose state, followed by death. To another pigeon a sub-cutaneous injection was applied, with rather more than double the quantity of alcohol used in the former experiment, but without the joyote; no accident after more than half an hour.

The same bird was made to swallow a teaspoonful of the oil extracted with ether. It was attacked with cough; after half an hour vomited some green matter with some of the oil, without being relieved. Four hours after it became comatose and paralyzed in both legs, and half an hour later died without convulsions.

On the 9th, half a teaspoonful of the same oil was administered to each one of two large pigeons. They vomited it, and rapidly recovered. To the same birds, more than half a teaspoonful of the same oil was given June 10th. One vomited, and nevertheless died half an hour afterwards, having coughed some. The other neither coughed nor vomited, but remained affected, and after six hours was comatose with the legs paralyzed, and soon after died.

On the 11th, another pigeon was injected by the rectum with a small spoonful of the same oil, and the anus was closed with a bandage. Half an hour afterwards it trembled in the legs, vomited repeatedly, and when the stomach was empty, had continuous nausea; an hour and a half afterwards had convulsions in the wings, the legs motionless, but not rigid, followed by a comatose state, followed by death three hours after injection.

On the 17th, two spoonfuls of the oil of joyote extracted by pressure were injected to each of two large pigeons. They vomited, and died in an hour and a half, without showing any other symptom.

The result of these experiments is, 1st: That the oil of the joyote-seed, either extracted by ether or pressure, is poisonous to pigeons. 2d: That it produces on these birds slight convulsions of the wings, paralysis of the legs, comatose state and death Difficult respiration is also observed, and continued vomiting when the oil is swallowed or injected by the rectum.

On the 10th of June, the active principle of the joyote, dissolved in a small quantity of alcohol, was injected sub-cutaneously to two large frogs. In a little while they became sleepy, apparently, and opened their mouths as if in want of air; they had but a few convulsive movements, troubled mobility, and scarcely exhibited sensibility even on burning their feet. After an hour death occurred. The active principle of the joyote-seeds, therefore, acts upon frogs as a poison, paralyzing the voluntary as well as the respiratory muscles, producing asphyxia and death.

On the 11th of June, a rabbit was injected with an alcoholic solu-

tion of joyote-seeds. One hour after it had difficult respiration, convulsions in the ears and head; afterwards, the respiration tardy and entirely diaphragmatic, had no strength to hold its head up nor to stand on its feet; in another quarter of an hour it died in a comatose state. The convulsion proceeded from the want of muscular strength.

Another rabbit was injected with alcohol alone, in about double the quantity used before, but only showed an intoxicated state, and recovered in an hour. A similar experiment with another rabbit caused prostration; the animal could not stand on its feet, and laid on its belly, without being able to stand or to walk, even after being pricked; an hour after it began to recover.

On the 13th of June, another rabbit was sub-cutaneously injected with the active principle of the joyote. An hour after its head trembled, wanted to keep it up, but could not unless laid against something; when raised, the convulsion ceased. Five minutes after it laid down, keeping quiet for awhile, afterwards convulsions in the ears and upper jaw took place, occasionally also in the fore feet; died ten days after, grunting and with difficult and diaphragmatic respiration.

On the 22d of July, ten centigrams of the active principle of the joyote were sub-cutaneously injected to a large rabbit; died in an hour; no symptom observed. On the same day, and at the same hour, a half ounce of the oil, extracted with ether, was given to another large rabbit. Forty-eight hours afterwards it was alive, did not present any remarkable symptom, and had appetite.

A large rabbit was made to swallow seven grams of the oil of joyote July 23d. Twenty-four hours after nothing had happened to it; it had eaten, but died in twenty-four hours more of traumatism.

Two grams of the aqueous extract of joyote were applied under the skin of a large rabbit, and afterwards dissolved; death occurred in two hours; no symptoms observed.

From these experiments the following conclusions are deduced: 1st. That the active principle of the seed of joyote is a violent poison for rabbits; that the oil extracted from the same seeds, though not poisonous for those animals, there are some satisfactory explanations to prove its toxic properties. 2d. That it produces the same as on pigeons —a muscular debility, passing into a general paralysis, invading the respiratory muscles, and lastly into slow axphyxia and coma.

On the 20th of June, a small adult dog was injected on one side of

the body with five centigrams of the active principle of joyote dissolved in a small quantity of alcohol. In fifty minutes he had diaphragmatic respiration and mucous vomiting. From that time until an hour afterwards the vomiting continued with great effort and grumbling, phlegm or bile in small quantity being thrown up, the respiration continuing diaphragmatic. In ninety minutes was seized with a strong general tetanic convulsion of about half a minute's duration, followed by relaxation and general clonical convulsion lasting three minutes, and death. No stupor, narcotism, signs of delirium or paralysis took place; had no diarrhœa, no alteration of the pupil was observed.

From this it may be inferred: 1st. That the thevetosin is very venomous. 2d. That it has a violent emetic action depending upon the nervous system, like tartar. 3d. That it acts on the respiration, making it difficult by paralysis, more and more complete on the external muscles of respiration. Judging from that, the tetanic convulsions followed by the clonical that preceded death, were the effects of asphyxia caused immediately from perlesia.

These experiments, made on different kinds of animals, prove that the emetic action of the different products of the joyote seeds is constant in all animals that can vomit; that the muscular system of respiration becomes paralytic, and that this paralysis can extend in some cases to the other muscles. Thevetosin, acting so powerfully upon the animal economy, may probably become of importance, and be employed more advantageously than curare.

NOTES ON THE PREPARATION AND TOXIC EFFECTS OF GELSEMIA.

By Theo. G. Wormley, M.D.

In a former number of this journal (Jan., 1870) we showed that Gelsemium serpervirens contained an organic acid, *gelseminic acid*,[1] and a nitrogenized basic principle or alkaloid, *gelsemia*, to the latter of which the plant owes its activity.

The method there pointed out for the preparation of these two principles was to concentrate the fluid extract of the root (containing the soluble matter of 480 grains of the root to the fluidounce) to

[1] According to the recent researches of Dr. C. A. Robbins, made in the laboratory of Sonnenschein, in Berlin, this principle is identical with *æsculin*.

about one-eighth its volume, dilute the concentrated extract with several times its volume of water, and, after subsidence of the resinous matter and filtration, to again concentrate the liquid to the original volume of the extract employed. The liquid was then acidulated with hydrochloric acid and the gelseminic acid extracted with ether, after which the liquid was rendered alkaline and the gelsemia extracted by chloroform.

More recent investigations have shown that, by the former part of this process, a large proportion of both the principles in question are separated with the resinous matter, and thus escape recovery.

After trying various methods for the more complete recovery of these principles from the fluid extract, we find the following to give the best results: A given volume of the fluid extract, acidulated with acetic acid, is slowly added, with constant stirring, to about eight volumes of water; after the separated resinous matter has completely deposited, the liquid is filtered and the filtrate concentrated on a water-bath to something less than the volume of fluid extract employed. The gelseminic acid is then extracted from the concentrated fluid by ether, after which the liquid is treated with slight excess of carbonate of sodium, and the gelsemia extracted with either or chloroform. For the extraction of the first of these principles it is not essential that the liquid should be acidulated, but in the presence of a free acid the results are more satisfactory.

A series of examinations of a number of samples of the fluid extract of gelsemium, prepared by several of the more prominent manufacturers, showed that, as found in commerce, it quite uniformly contains about 0·2 per cent. of gelsemia, and 0·4 per cent. of the non-nitrogenized principle. The only marked exception to this was found in the case of a fluid extract furnished a physician as a sample, which contained just double the ordinary proportion of the alkaloid and acid. Two samples of fluid extract, prepared by the same firm, as obtained from the shops, contained the ordinary quantity of the alkaloid and acid.

Within the last several years quite a number of cases of poisoning, by the preparation of gelsemium, have been reported. We have thus far collected reports of thirteen cases of this kind as having occurred in this country. Of this number nine proved fatal.

In the fatal cases the dose of the fluid extract varied, in the case of

adults, from about one fluid drachm to one tablespoonful; and the time of death from two hours and a half to seven hours and a half.

In one instance, 15 grains of the resinoid "gelsemin" proved fatal to a woman in one hour after the dose had been taken.

Fifty minims of a tincture prepared from four ounces of the root to one pint of dilute alcohol, proved fatal to a child, aged three years, in two hours. And in another instance a much less quantity of the tincture, taken in two doses, caused the death of a child in one hour after the second dose had been taken.

In one of the non-fatal cases a tablespoonful of the fluid extract had been taken; but it was soon followed by vomiting, induced by an emetic.

In another instance, in which from one to two teaspoonfuls of the ordinary fluid extract produced most profound symptoms, recovery took place under the administration of three grains or more of morphia, employed hypodermically, in half-grain doses, repeated overy few minutes. From the report of this case, by Dr. Geo. S. Courtwright ("Cincinnati Lancet and Observer," Nov., 1876), it would appear that the morphia was the means of saving the life of the individual.

In the cases thus far reported there seems to be only one or, at most, two instances in which the poison was administered with criminal intent.

Columbus, Ohio, February 27th, 1877.

SALICYLATE OF ATROPIA AND ITS APPLICATION TO PHARMACY.[1]

By C. R. C. Tichborne, Ph.D., F.C.S., &c.

It is well known how difficult it is sometimes, in the most simple preparations, to get one that shall meet all the requirements of the physician, the surgeon, and the pharmaceutist. Thus, whilst a particular preparation may just hit off the views of the prescriber, it may be devoid of keeping properties, a point of considerable importance in these days, when the dispenser has neither the inclination or time to make his own preparations.

A striking instance of this clashing of requirements is to be observed in the solutions of atropia contained in the "British Pharmacopœia."

[1] Paper read before the Pharmaceutical Society of Ireland, February 8, 1877, and communicated by the author.

There are two of them, both of the same strength (viz.: 4 grains to the fluidounce), as they are intended for the same use in ophthalmic surgery.

The first (liquor atropiæ) is a solution of the alkaloid itself in a mixture of spirit and water, the proportions being one-eighth rectified spirit to seven-eighths water. Such a solution keeps fairly, but produces great irritation of the eye, particularly in those cases where operations have been performed, or where there is a chronic sensibility attending many abnormal conditions of the organ. The liquor atropiæ is, therefore, inadmissable in such cases. We presume it is from this point of view that the rather absurd plan of introducing a second solution, corresponding in almost all its therapeutical effects to the first, is introduced. This solution is the liquor atropiæ sulphatis, which, although free from the objection of its being irritating, has another one equally objectionable, for it will not keep. A fungus is developed at the expense of the alkaloid ; the solution becomes thick, muddy and loses its strength. Perhaps the best remedy hitherto proposed was the one suggested in Dr. W. Smith's book, but from some cause or the other not generally adopted. The suggestion was that the solution should be made with camphor water.

In conducting some experiments, some years ago, on salicylic acid, it struck me, at the time, that the salicylates of some of the alkaloids might be used with a considerable amount of advantage, as they ought to possess inherent antiseptic properties. I, therefore, considered that salicylate of atropia would be an appropriate salt to operate upon, if such a salt could be formed. If atropia is mixed with salicylic acid, in equivalent proportions, a soft soluble mass is obtained that cannot well be crystallized. Although accidentally a semi-crystalline mass was once obtained by acting upon a sample of foreign atropia, these results could never be repeated ; it is probable that the crystallization was due to the presence of some impurity. My experiments were afterwards made with a beautiful crystalline specimen made by Messrs. Hopkins & Williams, of London. Atropia and crystallized salicylic acid were mixed in equivalent proportions, assuming that the last-named acid was a monobasic acid, and the alkaloid acted as a monad. If atropia be warmed with an excess of salicylic acid and a moderate quantity of water, and then allowed to cool, the excess of acid crystallizes only, and on evaporating down the mother liquor 2·7 parts of atropia were found to give 4·04 of colloidal salicylate of atropia, which is ·05 over the weight required by theory.

If the atropia and salicylic acid be mixed, in equivalent proportions, and water added, both the substances dissolve after some time, although the ingredients are both comparatively insoluble in cold water. The proportions used were, atropia 289, salicylic acid 138 grains. If the aqueous solution be evaporated, a colloidal mass will be obtained difficult to powder. An attempt was made to crystallize the salt from ether, but without success. Alcohol was also tried with a like result. This difficulty, as regards crystallization, is characteristic of the atropia salts. The actual solubility of this salt was determined at a temperature of 15° C. In two determinations it gave, as regards saturated solutions:

1st determination, . . .	4·76 per cent. salt.
2d " . . .	4·69 "

Therefore, if we call this 4·7 per cent., and as $\frac{95{\cdot}3}{4{\cdot}7} = 20{\cdot}2$, we may say that practically salicylate of atropia is soluble in 20 parts of cold water. Therefore it is evident that it is easy to prepare a solution of salicylate of atropia which shall represent the solutions of atropia of the "Pharmacopœia" by dissolving atropia and crystallized salicylic acid in the following proportions:

Atropia, ...	2·7 grains
Salicylic acid (crystallized), . . .	1·3 "
Water, ...	1 ounce

Mix, and allow it to stand until it is dissolved.

With care, however, the salicylate of atropia may be obtained in the solid form, and then resembles the sulphate in appearance. In the proportions given above the acid is slightly in excess of that required by theory. It is found desirable to have a slightly acidulated solution, or, under any circumstances, not an alkaline one, because a salicylate does not act as an antiseptic in the presence of an excess of alkaloid, or what may be called an alkaline solution. A solution made in the proportions given above will keep for an indefinite time. I have placed on the table a sample of the solution of salicylate of atropia, four grains to the ounce. It was made on August 4, 1876, so that it is now over six months old, and there is not the slightest sign of any fungoid growth. As regards the possibility of its producing irritating effects, I placed some of this solution in the hands of friends who are in the foremost ranks as regards ophthalmic surgery. They have, with their

usual courtesy, tried this preparation. I append some of their opinions, so far as they bear on the keeping and non-irritating properties of this solution.

Dr. A. Jacob writes: "When I received your salicylate I placed it side by side with a sulphate solution in my case of collyria, and I have used them comparatively in a great number of cases. I find now that, though exposed to the air, it contains none of the fungoid growth common in atropine solutions, and its mydriatic properties, as satisfactory as the first day. It is, unlike the Pharmacopœial liq. atropiæ, quite unirritating. It does not produce the conjunctival irritation which prevents in some cases the unlimited use of the ordinary solutions."

The rest of the paper was taken up with reports from Dr. Fitzgerald, Surgeon-Oculist in Ordinary to the Queen in Ireland, and Dr. Swanzy, both as regards its keeping properties and non-irritating power.

Owing to the supposed antiseptic properties of the acids, the benzoate and borate of atropia had been made, but solutions of these salts proved a failure, a fungus appearing after one or two months.

NOTES ON SOME MEDICINAL AND OTHER USEFUL PLANTS.

By Prof. X. Landerer, Athens.

Cyclamen Europæum and Hederæfolium.—The tuberous roots of these plants, the κυκλαμις of the ancient Greeks, has been used in olden times and is still employed by the peasants as a remedy in scrophulous affections; the root, radix cyclaminis s. arthanitæ of older pharmacy, is popularly called *swine-bread*, being dug up and devoured by these animals. The herdsmen of Greece eat it for its purgative properties. In ancient times the flowers were used for garlands, and the plant, having been consecrated to Bacchus, the wine goblets were surrounded with the leaves of the *kissos*, ivy, and the flowers of kyklamis.

Chrysanthemum segetum, which is principally found in burying-grounds, is used in Greece in the same manner as the Persian insect powder, and is quite efficaceous for the purpose, particularly when used in fumigation. The plant was known in olden times under the

names of *krysanthemon*, or gold flower; *chalkanthemon*, or copper flower, and *heliochrysos*, or sungold—the names having reference to the color of the flower-heads. At present it has various popular names, which are the equivalent of the English oxeye daisy.

Alhagi manna is the saccharine exudation of Hedysarum Alhagi s. Alhagi maurorum. Camel drivers state that camels like the plant and eat the tops of it, and that the excretion of this manna is thereby increased. The substance has been described by the older writers under various names, such as 'αερομελι, mel aëre, man arabum, mana hebraica, honey of John the Baptist, etc.

Tamarisk manna has some resemblance to the preceding. It is eaten with bread, and is produced by the puncture of an insect, Coccus manniparus, upon the branches of Tamarix mannifera, which grows in the peninsula of Sinai. It is principally collected by the monks of a monastery, who distribute it to the pilgrim visitors.

Use of Fennel.—The fruit of fennel, called *marathron*, has been always highly esteemed in Oriental countries as a remedy for sore eyes, and to the present time is employed by the people for that purpose in the form of infusions and cataplasms applied to the eyes.

Caraway, which appears to be the *kyminon* of old, and the *karos* of later writers, has also enjoyed great reputation. Among the preparations formerly employed was particularly a mixture with salt and a kind of sauce, to prepare which special servants were kept by the rich. At present caraway is used like other common aromatic plants.

Equisetum.—The plants of this genus were formerly called *hippuris*, meaning horsetail, from ἵππος, a horse, and 'ουρα, tail, and has, therefore, the same signification as the present botanical name which is derived from *equus*, horse, and *seta*, bristle. As in olden times, several plants of this genus still enjoy a popular reputation in dropsy and various nephritic diseases. I have known them, more particularly Eq. hyemale and palustre, to be employed by old physicians in connection with the herb of

Parietaria officinalis, the *helxine* of the old authors, and which was also called *parthenion* or virgin's plant, *perdinion* or partridge herb, because partridges were supposed to like it, and sometimes *urceolaria*, from its use for the cleaning of glass vessels. The two plants combined were used, with supposed good results, in dropsical, phthisical,

scrophulous, cancroid and other chiefly incurable and contagious diseases. About 30 years ago the custom prevailed in the Orient, but is now dying out, that after the death from the first named diseases, the clothes and other effects of the deceased were burned, the house and walls scrubbed and white-washed or painted, because the diseases were considered contagious.

Agave Americana is now quite common in Greece and other Oriental countries; the genus derives its name from the Greek ’αγαυος, signifying wonderful, splendid. At the Olympia Exposition, held a few years ago at Athens, elegant fabrics for ladies' wear were exhibited and much admired, which had been made from the textile fibres of this plant. This industry is carried on in the Ionian Islands, mainly in Zante and Cephalonia, and gives employment to many women and children. An extract prepared from the leaves is medicinally employed to some extent.

Spartium junceum is another plant the fibres of which furnish the material for excellent fabrics. By the women of Maina and Sparta they are principally made into carpets, which, when properly kept, are almost indestructible, and will last for 20 or 30 years. These textiles, fine specimens of which were exhibited at the late Olympia Exposition, are called *spartopana*. The same material was formerly used for preparing many articles of domestic use. The plant has always been esteemed for bees; it has been employed medicinally for its diuretic and drastic properties.

Corinthian Raisins.—The day preceding the festival of the holy Elias, 19 July, old style (August 2), is one full of excitement; for on that day thousands of laborers, mainly women, children and old men, are engaged to commence the harvesting of the grapes on the following day, which, in the form of the so-called *currants*, represent for Greece an annual income of from 40 to 50 million drachms. There is scarcely another enterprise as profitable, and for that reason all the suitable soil on the Corinthian bay is converted into vineyards. With merry songs the laborers march to the vineyards to prepare on the first day their tents and huts from boards and shrubbery. In the meantime the drying-floors (*alonia*) have been prepared by leveling a suitable piece of ground with a mixture of clay and cowdung, not omitting sufficient drainage for the rapid removal of water in case of rain. Many

coopers are at the same time engaged in making barrels for packing the raisins, and the merchants who have purchased the product in advance so far as possible, look anxiously for the arrival of the English steamers, which to the number of thirty or forty or even fifty usually congregate at the different ports. British gold coins are then in circulation, and the joy is general, from the carrier of burdens to the wholesale commissioner and merchant, in the expectation of the high wages and profit derived from this monopoly of a portion of Greece and the Ionian Islands.

After ten or twelve sunny days the fruit is dry enough to be separated from the stalks and farther purified by winnowing, when it is carried to the warehouses for packing and storage until it is shipped; the weighing and packing being done under the supervision of government officials. Each shipmaster is anxious to secure the first cargo, and the departure of the vessel carrying the so-called *primaroles*, is the occasion of festivities, adorning of the ship with wreaths and the firing of cannon. But throughout the general joy, the anxiety of many is plainly visible, lest a heavy rain might be the cause of disappointing the hopes and expectations of thousands of families.

Grecian Grapes.—More than fifty varieties of grapevines are cultivated in Greece, yielding as many different wines. A number of years ago attempts were made to transplant the valuable grapevines of Hungary and Germany to Greece; but though they flourished in the sunny oriental clime, the acidulous grape from the Rhine became rich in sugar, and produced a wine resembling those obtained from indigenous grapes, and the latter acquired a harsh and acid taste when cultivated in Southern Germany or on the Rhine. The proverb, "Suum cuique," is probably also applicable in this case.

NOTE ON XANTHIUM SPINOSUM.

By the Editor.

During the past year the above plant has attracted some attention in Europe in consequence of its asserted prophylactic action against hydrophobia, and experiments were made with it in France with the view of testing its properties and virtues in that dreadful disease. That they have had a negative result has already been stated in our last volume (page 571); but since some inquiries for the new drug have been made

in this country, and since the plant has been naturalized in various parts of the United States, we present, with the present number, a plate which has been copied from the "Swiss Pharmaceutical Weekly," and represents a branch of the plant in natural size.

The genus Xanthium belongs to the natural order of Compositæ, tribe Senecionideæ, sub-tribe Melampodineæ, division Ambrosieæ of DeCandolle. It is characterized by having the staminate and pistillate flowers in different heads upon the same plant; the involucre of the former, which are placed at the top of the branches, is sub-globose, consists of free scales placed in one row, and contains many florets with clavate, shortly five-lobed corollas. The pistillate heads have an oblong or ovoid involucre, which is closed, coriaceous, armed with hooked prickles and one or two strong beaks at the apex, and contains two florets with filiform corollas, no stamens and flat akenes destitute of pappus. The plants of this genus are all coarse-looking, annual weeds, with stout branching stems and alternate leaves, and are known by the trivial names of clot-weed and cocklebur.

The species under consideration is originally indigenous to the southern part of Europe, from Southern Russia west to France, but has gradually spread farther north into Hungary, Bohemia, Silesia, Switzerland and Alsace, but in most places it occurs but sparingly, the farmers aiming at its extirpation on account of its rapidly spreading into the fields to the great injury of the crops. It has likewise been to some extent introduced into most civilized countries, and in the United States is found spontaneous and completely naturalized in the eastern section from the New England States south to Georgia, growing in waste places and neglected fields, near the sea board and along rivers. Dr. W. Darlington, in his "Flora Cestrica," 1853, strongly advocates its total extirpation, and states that "some years since the authorities of one of our cities, where it was becoming a great nuisance in the streets, enacted an ordinance against it, denouncing it by the name of *Canada thistle!*"

It produces a terete striate and pubescent stem, from one to three feet in height, and has lanceolate or ovate-lanceolate, shortly petiolate leaves, which are white downy beneath, the lower being three-lobed, the upper more or less cut-toothed or entire. At the base of each leaf are stipules, consisting of sharp, three-forked, yellowish spines, frequently attaining an inch in length; the fertile burs are crowned

with one short and inconspicuous beak. The leaves dried and powdered are of a green color, have a strong somewhat narcotic odor and a bitter taste. According to C. C. Keller, they contain a volatile oil and bitter extractive. The results of the analysis of Yvon and Nocard will be found in our last volume, page 538. The leaves were recommended to be taken uninterruptedly for six weeks in doses of 0·60 grams (10 grains) three times daily, for adults, and for children under 12 years, in half the quantity stated, cataplasms of the leaves being applied at the same time. For dogs, the doses required are said to be considerably larger. The drug is stated to be successfully employed in southern Russia, in cases of threatened hydrophobia.

A report on the action of Xanthium spinosum, by Trasbot and Nocard, was read December 14, 1876, before the *Société centrale de médecine vétérinaire.* The authors had inoculated eleven dogs with saliva taken from a living rabid dog; six were treated with the leaves of xanthium, but nine of the whole number died in from fourteen to eighty days, two with all the symptoms of hydrophobia, the remainder with nervous symptoms, not decided enough to attribute them to this disease. The authors therefore conclude that the spinous cocklebur has not the property of curing hydrophobia, nor does it prevent its development, after either natural or experimental inoculation.

These experiments, it must be admitted, do not support the statements of Dr. Grzymala, of Podolia, who a year ago recommended it, based upon observations extending over twenty years, and numerous cases of men and animals bitten by rabid dogs or wolves. According to L. Ladé, it was noticed as early as 1861 by Oesterle, in his "Arzneimittellehre," as a remedy highly recommended by a Russian physician in hydrophobia. Other experiments are being made in the veterinary school of Zurich and very likely in other places, so that the true value of the proposed remedy will soon be established. Thus far it appears as if it was to share the fate of the *xanthion* of the ancient writers, the root, leaves and fruit of which were formerly held to possess diuretic, diaphoretic and alterative properties.

The species alluded to is *Xanthium strumarium* Lin., which is now found in most parts of the civilized world, though perhaps originally indigenous to Asia, Europe and the northern part of Africa. It resembles the species above described, from which it is distinguished by the absence of spines at the base of the leaves, by the broadly

XANTHIUM SPINOSUM, *Lin.*

ovate, somewhat trilobed leaves, and by the two-beaked burs. It is common in this country, particularly west. Closely allied to, and perhaps a mere variety of it, is the *X. echinatum*, *Murray*, which is mainly distinguished by its larger burs, and is found here near the seashore, in many places of Mexico, South America and the Old World. *X. indicum*, *Roxb.*, which is found from China and India west to Egypt, is likewise very similar to it. Evidently distinct is *X. catharticum*, H. B. K., of Ecuador, with ternate spines and pinnatifid leaves, which are hispid above and tomentose beneath. The herb is used in its native country as a cathartic under the name of *cazamaroucha*.

SOLUTION OF CITRATE OF MAGNESIUM.

To the Editor of "American Journal of Pharmacy."

DEAR SIR—On perusing the March number of the journal, I noticed two articles on solution of citrate of magnesium; one in particular (by John W. Watts) attracted my attention. He states that the "officinal formula is liable to a series of objections in regard to preparation and preservation, and then proceeds to give a formula requiring 450 grains of citric acid and 120 grains of calcined magnesia, and substituting boiling water for cold water.

I think Mr. J. W. W. must have mistaken an old edition of the "Dispensatory" for the "Pharmacopœia" of 1870, for the formula in the latter directs 400 grains of citric acid, and magnesium carbonate instead of calcined. Regarding his reference to an almost rotten preparation, I would like to ask, Where is the "pharmacist" of any standing who will dispense a decomposed solution?

During my experience I have adopted the following formula as yielding a satisfactory preparation, and one that will remain unchanged for a reasonable length of time (two weeks): Ten troyounces of citric acid is dissolved in a quart of hot water, five troyounces of carb. magnesium is added, and the whole stirred until dissolved; it is then filtered into a graduated five-pint bottle, and sufficient cold water added to make three pints. This is enough for twelve bottles. Put two fluidounces of syrup of citric acid in each bottle, add four fluidounces of the solution, nearly fill with cold water, cork and label the bottles, and place on a shelf. When I have a call for it, I remove the cork, add forty grs. bicarbonate potassium, replace the cork and secure it with

twine. By telling the person to "shake the bottle well" before opening, I dispense unexceptionable citrate. The above is virtually the "officinal formula," or, I should say, a multiple of it. The above quantity (12 bottles) lasts us about six days, and I am confident that the last is as good as the first. I am afraid friend "W." has not tested the efficiency of the present "Pharmacopœia" formula, and I think it would be advisable to do so, before condemning it.

Respectfully yours, W. WESLEY.

West Philadelphia, March, 1877.

PILLS AND PILL MASSES.

BY HANS M. WILDER.

Mr. Moore, in his twenty-two-and-one quarter-page article on sugar-coated pills (this journal, p. 105) states several objections to plain pills, the chief of which seems to be that when to be made freshly too much time will be consumed. I venture to offer an expedient which I have used for several years, whereby the time is reduced to a minimum. Those pills which are very often called for I keep in mass, ready for rolling out. Take, for instance, compound cathartic pills: I mix the powders and make into a stiff mass with q. s. glycerin, and keep in a jar, marked: take four grains for each pill (making allowance for the glycerin). In this way any kind of pills often called for may be kept. The rolling out does not take one minute, and people know that the pills are fresh, *having seen them made.* I must say that since I started this feature (and the one with freshly made tartrate of sodium) I had more calls for either than ever before: our customers appreciate such things. The idea of keeping pill masses was easily got by noticing the convenience of blue mass; objections, there are none: if a stiff mass be made, it will not soften so soon, notwithstanding the hygroscopic property of glycerin. Spoiling is out of question; make only sufficient to last a week or so.

UNGUENTUM HYDRARGYRI NITRATIS.

BY S. WOLFF.

(*Read at the Pharmaceutical Meeting, March* 20.)

Of all the preparations in the "Pharmacopœia," there is probably none that causes more disappointment and dissatisfaction to the con-

scientious pharmacist than the subject of this paper. There is none, perhaps, that has been experimented with as much, and none that there has been less ascertained about, or which has yielded less satisfactory results, notwithstanding the many theories that have been advanced for it.

Many of our older pharmacists have their own pet formulas for this ointment, and every one of them assures you that it makes a first-rate preparation, possessing all the necessary qualities for which this truly meritorious article is celebrated, but it was heretofore never our lot to see any of them that could lay claim to being an elegant or scientific preparation. Long ago the olive oil and lard of European "Pharmacopœias" have been discarded as unsuitable for the purpose, and the neatsfoot oil adopted instead, which yielded an article of more unctuous consistency, but the color thereof illy corresponded with its popular name. The lard itself of the present edition has much improved the appearance of this ointment, but it makes the name of "ointment" a mere sham, as it requires considerable physical exertion to reduce it sufficiently to admit it being mixed with ointments or lard; the color of it, besides, gradually changes from a bright yellow into a greenish dark hue. Butter, too, has been recommended as furnishing the article "par excellence," but alas, it answers no better than all the previously mentioned oils and fats. The author of this paper, in a moment of despair, was induced to try the now popular cosmolin to that end, only to find, that if exposed to the air, it rapidly assumed a dark-brown color, holding the subnitrate of mercury with a great deal of nitric acid in suspension, entering no combination with it, while by the subsequent liberation of nitrous acid it is puffed up not unlike a sponge cake. Dr. Fessenden, of North Carolina, seemed to have comprehended the fallacy of our formulas, when he proposed the employment of non-drying oils, and we had almost cause to chide the revisors of the "Pharmacopœia" for not adopting his method at once, had we not reason to believe that they had succeeded with it as little as ourselves, and ascertained that, although theoretically feasible, the preparation therefrom was most anything else than citrine ointment.

The chemical reaction taking place in the formation of this ointment is confessedly not precisely known, consequently little understood, and various writers have sought to place the greatest importance on the regulation of heat and mode of admixture with a view of obtaining a

favorable result, but how far they have succeeded I will leave to the decision of any of our pharmaceutical brethren, who have closely adhered to their instructions. The probable liberation of oleic, stearic and palmitic acids has been correctly pointed out, but what in such a case became of the glycerin has not been made evident.

The object of obtaining a more definite idea of what changes had taken place, led the writer of this to dissolve a number of specimens of the "U. S. P." preparation, partly his own make, as also some obtained from other reputable establishments, in petroleum benzin and ether. He was surprised to find what small precipitate they afforded, being only from two to three grains in sixty of the ointment, whereas, by weighing the fatty vehicle and the resulting preparation, the mercurial salts in the preparation, after liberal deduction for water present, should not have been less than ten grains in each drachm, so that a solution of mercuric oxide forms evidently the principal part of the ointment, and the oxide can actually be separated from it by precipitation with an alkali.

Why the oleate of mercury itself should therefore not be preferable to the ointment as a therapeutical agent we will leave to the medical faculty to investigate, as certainly a more uniform, reliable and scientific preparation can be obtained by the direct process.

That possibly the presence of stearic or palmitic acids were the cause of the changes noted above, and which make the present form of the ointment so objectionable, naturally suggested itself to us, and our next step was to procure oils which were nearer the pure olein. Lard oil, filtered at a low temperature, used for that purpose, showed a slight improvement in consistency, but the color of it made it, if anything, more objectionable than all the rest previously employed. Oil of sweet almonds fared no better, and it then occurred to us that the fault of reducing the mercurial salts was not as well with any of the fatty acids as with the glycerin, which in the solutions of benzin and ether could not be detected, although positively insoluble therein, so that it must have underwent a change, and there seems reasonable cause to suppose that it was oxidized at the expense of the mercurial salts, leaving part of them suspended in the ointment as a mixture of sub-nitrate, mercurous oxide and globulous metallic mercury, to all of which the ointment owes its dirty-green color, with black streaks therein.

After the above, the only chance of success rested, perhaps, in the employment of purified oleic acid (for the preparation see "A. J. Ph.," January number, 1877, page 4), although the experience of high chemical authorities as to its rapid change into crystalline elaïdic acid on contact with nitrous acid, seemed to speak much against a favorable result. Actual experience seems in this case to have contradicted all theories, for not only does it yield a beautiful pale-yellow ointment (specimen submitted), which undergoes no change in color nor consistency, but its composition, as regards its mercurial constituents, is closely analogous to the preparation of the "U. S. Pharmacopœia." A solution thereof in petroleum benzin, ether or alcohol shows a beautiful yellow precipitate of equal amount of unchanged mercuric sub-nitrate and the same quantity of the oleate as the officinal article, while the nitrous acid of the decomposed mercuric deutonitrate seems just to create sufficient elaïdic acid to make its consistency that of simple cerate.

The theory that elaïdic acid has the power to change admixed oleic acid indefinitely into the former seems also not confirmed, for although we have kept specimens for months, the consistency has not changed. The odor of it is not near as objectionable as the product of the "U. S. P.," and as they are both mainly oleates, there can be no possible objection to its therapeutical employment.

In conclusion, I would state that the proportions of mercury and nitric acid employed were strictly those of the "Pharmacopœia," only the equal quantity of purified oleic acid being substituted for the lard. No particular precautions are necessary in regard to heat, no further than that the oleic acid should be heated to the full extent of a water-bath without pressure, before adding the mercurial solution, and should be kept at that point until all reaction and effervescence has ceased, whereupon it is to be stirred until it becomes cold and congealed.

Philadelphia, Pa., March, 1877.

HINTS ON THE USE OF BOOKS BY STUDENTS AND ASSISTANTS IN PHARMACY.

By J. B. Moore.

It is presumed that the library of every intelligent pharmacist should contain, at least, the following books, viz.: U. S. Pharmacopœia, U. S. Dispensatory, Fowne's or Attfield's Chemistry, Morfit's Chemical

Manipulations, Gray's or other standard work on Botany, Webster's or other Unabridged Dictionary, Dunglison's Medical Dictionary, with perhaps, one of the standard works on Therapeutics and Materia Medica and on Toxicology.

If the pharmacist be an ambitious, progressive and studious man, who is desirous of extending his knowledge beyond the usual curriculum of pharmaceutical studies, he may add to his library other valuable pharmaceutical and medical books, such as his taste may dictate and his purse enable him to procure.

These books are generally expensive works, and should be handled, by whoever uses them, with the greatest care, or they will soon become soiled and torn to pieces. I have thought it advisable, therefore, to offer a few hints to the students and assistants in pharmacy, as to the manner in which these books should be handled and used to prevent their becoming soiled or torn.

Nothing is so provoking to a preceptor as to see his student or assistant damage or soil his valuable books by rough or careless handling. Be careful in laying a book down, not to place it too near the edge of the counter or shelf, or in any position where it is likely to be knocked off or to fall to the floor. If the U. S. Dispensatory, the dictionary or other large book falls it may strike on one corner, which is liable to shatter it to such an extent as to produce a loosening of the back, and in a short time leaf by leaf will fall out and it will soon become either an entire wreck or so badly damaged as to be of little use for reading or as a book of reference.

Again, some young men, when reading a book and required to wait upon a customer, never look how or where they lay it, and often place it on its face, with its pages open, and perhaps where oil or other substance has accidentally fallen, and thus deface and soil the leaves, in addition to the injury that is done to the back by the strain caused by the improper position in which the book is placed. Now there is no excuse for this careless habit, and such vandalism should be rebuked, on every occasion, in the severest manner.

Every young man should feel glad to think that he has the inestimable advantage of access to useful and valuable text books for reading and reference. A proper appreciation of such advantages, if not his own sense of justice and duty to his preceptor, should prompt him to the greatest care in the handling and use of such works. What

would the student think if these books were within his sight and he was not allowed access to them, as should by rights be the case if he does not know how to use and properly take care of them.

There is nothing that so utterly disgusts me, or lowers a young man so much in my estimation, as to see him, by carelessness or with ruthless hand, soil or mutilate any of my books.

Books, when you have done with them, should be *at once carefully* replaced where they belong, in the library or other place.

I want every young man who reads this article to bear in mind the advice here given, and try to cultivate a habit of carefulness in the use of books, as well as in everything else within the province of his business. The observance of such a habit will, I can assure him, tend to elevate him in the confidence and respect of his employer, and will redound to his own personal advantage very greatly.

Philadelphia, March, 1877.

SELECTIONS FROM THE DANISH JOURNALS.

By Hans M. Wilder.

It might probably interest the readers of the "American Journal of Pharmacy" to learn the requirements at the examinations of graduates in Denmark. It must be premised that the preparations (and analysis) with the several written reports have to be made in three consecutive days of twelve hours each, during which time none is allowed the use of books, nor is conversation or questions permitted; all the time a strict surveillance being kept (in fact, the graduates are shut up). The seven graduates from last examinations had, respectively, to make:

Pharmaceutical Preparation.—1. Acetate of zinc from 30 grams oxide of zinc. 2. Kermes mineral from 10 grams sulphuret of antimony. 3. White precipitate from 20 grams corrosive sublimate. 4. Subnitrate of bismuth from 20 grams bismuth. 5. Protosulphate of iron from 60 grams iron. 6. Acetic acid from 20 grams acetate of sodium. 7. Acetic ether from 200 grams acetate of sodium.

Qualitative Analysis.—1. Tartrate of lime, cane sugar and oxide of antimony. 2. Tannin, gallic acid, tartrate of potash and traces of carbonate of lime. 3. Nitrate of baryta, nitrate of lead and subnitrate of bismuth. 4. Sulphate of quinia, alcohol and chloride of copper. 5. Soap and starch. 6. Sulphate of manganese, alum, sulphate of copper

and traces of sulphate of iron. 7. Arsenious acid, oxide of antimony, carbonate of lead and carbonate of lime.

Chemical test Preparation.—1. Nitric acid from 500 grams nitrate of sodium. 2. Sulphide of ammonium from 200 grams aqua ammoniæ. 3. Ether from 700 grams alcohol. 4. Ammonia from 500 grams chloride of ammonium. 5. Nitrate of silver from 30 grams silver. 6. Chloride of copper from 30 grams copper. 7. Nitrate of barium from 150 grams native sulphate of barium.

This is the practical part; the theoretical examination is oral, and occupies two additional days.—*Nij Pharm. Tid.*, 1877, p. 33.

Laws of Denmark.—The law of Dec. 1, 1779, which forbids advertisements of patent medicines, etc., has been enforced, and also another law of Jan. 10, 1791, which forbids to advertise *rupture bandages* and similar articles (*sic!!* W.)—*Arch. for Phar.*, 1877, p. 33.

Statistics of Sweden.—The sale of arsenic from all Swedish pharmacies amounts to 10,142 lbs. for 1875. With 4,341,559 inhabitants, Sweden has 558 physicians and 218 pharmacies—one physician to about 7,800, and one apothecary to about 20,000.—*Ibid.*, 1876, p. 498.

Aqua Toffana.—This well-known poisonous water (from the sixteenth century) is said to have been a solution of arsenic in aqua cymbalariæ.—Gœppert. *Ibid.*, 1876, p. 489, from *Ph. Zeit.*, 1876, p. 83.

Arsenias Auricus.—In France has for some time been used a remedy under the name of arseniate of gold (arseniate d'or). Thibault (Lille) has examined it, and found that it is only a mechanical mixture of arsenicic acid and Au_2O_3 in variable proportions, wherefore he warns against its use.—*Ibid.*, 1876, p. 490, from *Bull. Soc. Méd., Lille.*

Tablettes Pectorales.—(Trochisci glycyrrh. c. ammon. muriat.) The first formula had 1 part chloride of ammonium to 8–9 parts licorice, but the troches were very hygroscopic. Hager recommends the following as better: Ammon. chlorid., 10; extr. glycyrrhiz. pulv., 80; sacchar. alb., 30; tragacanth., 2; glycerin., 5; aqua, q. s. to form a mass, which is rolled to a thickness of 1–1½ mm. and cut in rhombes of 10–12 mm. They can be silvered if required—*Ibid.*, 1876, p. 493, from *Ph. C.*, 1876, No. 45.

Squill.—A. Janssen recommends not to slice the bulbs, but to keep them whole in the cellar. The tincture and vinegar prepared from the

fresh bulb are much more active than when prepared from the dried slices. Powdered squill not being very reliable, Mr. J. recommends to mix the tincture with a certain proportion of sugar, and evaporate at very low heat to dryness. The constituents of squill are: 8 tannin, 14 sugar, 30 mucus, 10 red coloring principle, 2 yellow, volatile principle, 5 salts, 1 scillitin and a trace of iodine.—*Ibid.*, 1876, p. 485, from *Ph. Zeits.*, 1876, No. 85.

Sydenham's Laudanum, Wine of Opium, etc.—Bellecret recommends to replace 100 parts of the wine by glycerin, which prevents, in a great measure, formation of deposit, and withal makes the preparation keep better.—*Ibid.*, 1877, p. 31 from *Rép. d. Ph.*, 1877, p. 5.

Silico-tungstic acid has been recommended by R. Godeffroy as the most sensitive reagent for alkaloids. For instance, a solution of muriate of quinia (1 : 25,000) yielded a precipitate with one drop of an aqueous solution of the above acid (likewise, muriate of cinchonia [1 : 200,000] and muriate of atropia [1 : 15,000.]). The precipitates are very little soluble in concentrated muriatic acid, and the alkaloids can be separated by solution of caustic potassa. The silico-tungstic acid is best prepared by boiling pertungstate of sodium with freshly precipitated silicic acid; precipitate with solution of mercurous nitrate, wash the precipitate, decompose with muriatic acid, and filter. Concentrate the filtrate by evaporation and let crystallize. The crystals fuse at 36° C., and are very soluble in water and in alcohol.—*Nij Pharm. Tid.*, 1877, p. 5, from *Ph. C.*, 1876, No. 51.

Icteric Urine.—Dr. Constantine Paul recommends, as a test, Violet de Paris (methylanilin violet) 5 parts in 100 parts water or alcohol; 1–5 drops poured on 10 cc. healthy urine produces a circle of a pure blue color; icteric urine colors the circle intensely carmine red. This test is reliable, since no other substance produces this change of color, and it is more sensitive than either iodine or nitric acid.—*Arch. for Pharm.*, 1877, p. 32, from *Union Ph.*, Sept., 1876.

Nutrition of Infants.—Dr. Altherr has examined into the relative nutritive power of different kinds of infants' food. He found the average daily increase in the weights of babies by using mother's milk 7·2 grams; nurse's milk, 4 grams; mother's milk at first and afterwards cow's milk, 3·8 grams; cow's milk alone, 2 grams; condensed milk, 1 gram; Nestlé's Infants' Food, 0·5 gram. The number of babies examined

was 480, but many of them were weighed every day for the first fourteen days.—*Ibid.*, 1876, p. 483, from *Zür. Gesundheitspflege*, 1875.

Gold.—Jul. Thomsen (well-known for his thermo-chemical researches) has examined into the behavior of gold and its salts, and found that there exist three allotropic states of it: 1. Gold reduced from a solution of the chloride by sulphurous acid forms a lumpy mass. 2. Reduced from the bromide it forms a very fine dark powder, which keeps its powdery form even after drying. 3. If reduced from protochloride, bromide or iodide, it forms a very fine powder, with yellow color and metallic lustre. Mr. Th. has prepared and reports at great length on Au_2Cl_4, $AuCl_3$, $AuCl$, $AuBr_3+AuBr$, $AuBr_3$, $AuBr_4H+5H_2O$, $AuBr$, Au_2O_3.—*Ibid.*, 1877, p. 1, from *Tidsk. Phys. and Ch.*

Hardened (toughened) Glass.—There exists a factory in Pittsburgh, Pa. (Ditheridge & Co., Fort Pitt Glass Works), which makes that kind of glass after a secret process of its own. La Bastie's process consists in a peculiar way of hardening. The above-named American firm obtained the above results by a peculiar composition of the glass mass. The editor thinks it probable that, considering the great hardness and peculiar transparency and freedom from color, borax seems to play a rôle, and is probably the real secret.—*Ibid.*, 1876, p. 476.

Antichlor.—Hitherto only hyposulphite of sodium has been used as antichlor; but, notwithstanding its great absorption power for chlorine, it has one drawback—sulphur is precipitated, which is soon oxidized to sulphuric acid, and "rottens" the paper or tissues. Although sulphite of sodium is not decomposed in this way, its absorption power for chlorine is very weak, and therefore it could not replace the hyposulphite. R. Wagner recommends nitrite of sodium, which does not in any way attack the bleached articles. The relative absorption powers of these three salts are as follows: 100 pts. hyposulphite take hold of 114·4 pts. chlorine; 100 pts. sulphite only of 28·1 pts. chlorine; 100 pts. nitrite as much as 103 pts. chlorine.—*Ibid.*, 1876, p. 477.

Dry Rot.—The best preservative against dry rot is the following of Mr. Schwartze, who made millions by it, and by whose recent death the secret was revealed: 1 part oil of cassia, 1 part woodtar and 1 part common train oil; apply three coats on the reverse sides and on the ends of planks, floors, etc. In all probability oil of cassia played the chief rôle as preservative.—*Ibid.*, 482.

Ice Machines.—Carré uses water ammonia, or ether, all of which have some inconveniences which prevent them from being used as much as they deserve. Windhausen uses compressed air, but the machine is somewhat difficult to manage. Pictet (Geneve) uses anhydric sulphurous acid, which is very easy of application; it exerts at —10° C. a little over one atmosphere and at +35° C. not more than four atmospheres' pressure. Sulphurous acid does not corrode the metal, nor does it dissolve the lubricating grease, which, by the way, is not necessary in every place, since the sulphurous acid acts itself as a lubricator. These latter machines make ice at an expense of 10—12 frcs. per 1,000 kilos.—*Ibid.*, 1877, p. 19.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Pilocarpina and its Salts.—A. W. Gerrard has succeeded in purifying pilocarpina by dissolving the nitrate in boiling alcohol, from which it separates on cooling in tufts of white shining crystals; by three crystallizations it can be obtained in an almost perfect state of purity. The alcohol holds in solution a small portion of the salt. By dissolving the crystals in water, treating the solution with potassa, shaking with chloroform, and evaporating this solvent, the purified alkaloid is obtained. By dissolving the alkaloid in water, neutralizing with acid, and evaporating spontaneously, the following salts were obtained in a crystalline state, the nitrate and phosphate being more stable, and showed the following behavior to solvents:

	Water.	Alcohol.	Ether.	Chloroform.	Benzol.	Carbon bisulphide.
Nitrate	soluble.	sparingly in cold	insoluble.	insoluble.	insoluble.	insoluble.
Phosphate	soluble.	sparingly in cold.	insoluble.	insoluble.	insoluble.	insoluble
Acetate	soluble.	soluble.	soluble.	soluble.	soluble.	insoluble
Hydrochlorate	soluble.	soluble.	insoluble.	soluble.	insoluble.	insoluble.
Hydrobromate	soluble.	soluble.	insoluble.	soluble.	?	insoluble

—*Phar. Jour. and Trans.*, Sept. 23.

Aconite Alkaloids.—C. R. A. Wright read a paper on this subject before the British Pharmaceutical Conference, in which he detailed his successful experiments for obtaining crystallized *aconitia* essentially by Duquesnel's process, and gives his analytical results. An amorphous base, perhaps *napellina*, was likewise obtained; but it is uncertain yet whether it pre-exists in the fresh root or is formed in drying or during the extraction process.

The method that ought to be adopted for the preparation of a pharmaceutical product of constant composition and properties is: 1st, percolation by alcoholic tartaric acid, and evaporation to a small bulk at as low a temperature as possible; 2d, crystallization from ether of the base separated by sodium or potassium carbonate from the aqueous solutions of the extract (after separation of resin, &c.); in this way, an inert, bitter base, if present, would be separated; and, 3d, further purification by conversion into a crystalline salt (hydrobromate). In this way, small quantities of another base which obstinately adheres to aconitia when crystallized from ether, are separated. The base obtained in this way is a simple body, expressed by the formula $C_{32}H_{43}NO_{12}$; in a state of great purity, and possessing high physiological activity.—*Ibid.*

Non-existence of Aricina.—Pelletier and Cariol obtained from a cinchona bark an alkaloid which they called *aricina* (from the Peruvian port Arica); the same alkaloid was obtained by Boerkoehn, who named it *cusconina*, from Cusco, the port of exportation of the bark. Manzini isolated afterwards from the pale penquina an alkaloid, *cinchovatina* (from Cinch. ovata), which Bouchardat and Winckler proved to be identical with aricina. O. Hesse has recently re-examined these barks, and arrived at the conclusion that the aricina and cinchovatina, when perfectly pure, are identical with *cinchonidia*. The same alkaloid is also that recently obtained by De Vrij from a cinchona bark from Jamaica, and by him supposed to be new.—*Zeitschr. Oesterr. Apoth. Ver.*, 1876, No. 34, from *Ann. d. Chem.*, clxxxi, 58.

Cinchona Culture in Java.—The cinchona bark harvest in Java was completed at the end of September, and yielded fully 45,000 kilos, of which 11,534 kilos were ready for shipment to Europe. At the auction sale in Amsterdam of the cinchona bark harvest of 1875, which took place June 1, 1876, the amount realized was 111,314.16 florins, while the total expenses of the culture during that year were 49,857.46 fls. Dr. C. Hasskarl, in his quarterly report, states that the decree of the Dutch government to send him to South America for the purpose of transplanting the cinchonas to Java, is dated June 30, 1852, so that the twenty-fifth anniversary of that culture is near at hand.—*Phar. Handelsbl.*, Jan. 17.

The Conversion of ricinoleic into stearic acid has been effected

by A. Claus and Hassenkamp. Pure ricinoleic acid is made by fractional precipitation of castor oil soap with calcium chloride, the first two-sixths being impure, the next three-sixths fractions pure ricinoleate of calcium. The acid had the composition $C_{18}H_{34}O_3$, and yielded with nascent hydrogen iodide (generated by adding phosphorus and iodine in the presence of a little water, and heating in a water-bath) iodstearidenic acid, $C_{18}H_{33}IO_2$. On treating the latter with nascent hydrogen, by boiling with zinc filings and hydrochloric acid, stearic acid, $C_{18}H_{36}O_2$ was obtained, and its identity proven by the form of the crystals, its solubility, fusing point, elementary composition, and the properties of its ethylic ether.—*Ber. Chem. Ges.*, 1876, 1916.

Emodin in Frangula Bark.—Old frangula bark was exhausted with dilute soda solution, and the liquid precipitated by hydrochloric acid; the precipitate was again boiled with soda and precipitated by HCl, then washed, dried and repeatedly crystallized from boiling absolute alcohol. A small quantity of a glucoside was removed by boiling with dilute sulphuric acid and crystallizing from alcohol or glacial acetic acid. C. Liebermann and M. Waldstein obtained it from the latter liquid in the form of orange-colored silky needles, containing acetic acid and water, which are expelled at 140° C., the crystals becoming opaque.

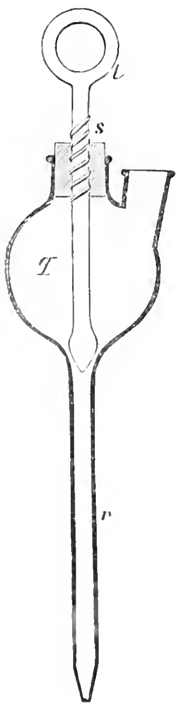
Ultimate analysis proving the composition of the crystals to be $C_{15}H_{10}O_5$, their identity with emodin from rhubarb was further proven by the solubilities, form of crystals and color of alkaline solutions; also by the following behavior: baryta and lime water yield red precipitates, which are somewhat soluble in boiling water with a red color; alum solution dissolves slightly with a yellow color, ammonia yielding red precipitates; evaporation with nitric acid yields yellow nitro-compounds, soluble in water with a red color; the behavior towards glacial acetic acid was that stated above.

The frangulinic acid of Faust differs in some respects from emodin; it is not impossible that it may be contained in the recent bark and gradually converted into emodin by oxidation.—*Ber. Deutsch Chem. Ges.*, 1876, p. 1775–1778.

The Strength of Tincture of Nux Vomica.—L. Siebold examined ten samples of this tincture, "British Pharmacopœia," and obtained extracts, varying for 1000 cc. of tincture between 2·7 and 10·1

grams. The amount of the tinctures necessary to impart a decidedly bitter taste to 10·000 parts of water varied between 4 and 14 parts. This difference in the strength is mainly attributed, by the author, to the use of nux vomica in powder of different degrees of fineness; for by prolonging the maceration from two to six days, the amount of extract was not materially increased. The author recommends that, in preparing the tincture, pharmacists should use the very finely powdered seeds only; 10 cc. of such a tincture should yield not less than ·09 grams of dry extract; one fluid drachm of it should impart a distinctly bitter taste to two gallons of water; and the addition of ten to twenty volumes of water to one volume of the tincture ought to produce a marked opalescence.—*Phar. Jour. and Trans.*, Sept. 30.

Tincture of nux vomica, "British Pharmacopœia," is much weaker than that of "United States Pharmacopœia," being made of two ounces to one imperial pint.



A simple separatory funnel has been constructed by C. Bulk; it consists of a glass globe *q* having two tubulures and a delivery tube *r*. The latter is closed by the conical end of a glass rod, which at *s* is fastened into a cork and can be raised and lowered by means of a glass thread fused spirally upon the rod, and by turning the handle *t*. The apparatus has been frequently employed by the author and works quite satisfactorily.—*Ber. Chem. Ges.*, 187?, p. 1898.

Santonate of sodium is prepared, by Lepage, by dissolving 10 grams of santonin in 100 grams of diluted alcohol, kept hot by means of a water bath, adding 80 grams of lime, previously slaked and suspended in a little water, and stirring frequently until the rose color produced has disappeared and calcium santonate been formed; then pour in a solution of 90 grams of sodium carbonate in 180 grams of water, agitate briskly, set aside to deposit, and filter. Concentrate the filtrate until it weighs 200 or 220 grams; after twelve hours powder the mass, suspend it in 800 grams of 90 per cent. alcohol, agitate frequently and after some hours decant from the excess of sodium carbonate,

which is to be washed with 200 grams of fresh alcohol. The solution is concentrated to 400 grams and set aside to crystallize; from 150 to 160 grams of small prismatic needles will be obtained, and about 20 to 25 grams more from the mother liquor.

The white salt contains 51 per cent. of santonic acid, dissolves in 3 parts of water and 4 of alcohol, the solutions having an alkaline reaction and a bitter taste.

Syrup of santonate of sodium is made by dissolving 5 grams of the powdered salt in 900 grams of warm simple syrup and add 100 grams of syrup of orange flowers; a tablespoonful or 20 grams of the syrup contain 0·05 sodium santonate.—*Phar. Jour. and Trans.*, Oct. 14, from *Jour. de Phar.*

Pill Coating.—The secret of successfully coating pills, according to Mr. Thos. Haffenden, is to varnish (with tolu and ether), first rendering them partially water-proof; then it is simply a question of manipulation to get a pearl-like covering with mucilage and French chalk; or albumen, freshly prepared in the way recommended for albumenized paper for photography, may be substituted for mucilage. —*Phar. Jour. and Trans.*, Sept. 23.

Preparation of Phenylsulphate of Potassium.—E. Baumann has obtained this salt from human urine, of which it is a normal constituent. It is readily prepared, synthetically, by boiling, for some time, powdered pyro-sulphate of potassium with a concentrated aqueous solution of phenol potassium, adding some alcohol and filtering while hot; on cooling, shining scales of the salt are obtained, which, after washing with alcohol, are nearly pure. The formation of the salt is explained by the equation: $C_6H_5KO+K_2S_2O_7=C_6H_5KSO_4+K_2SO_4$.

Cresylsulphate of potassium, which is a normal constituent of the urine of the horse, may be obtained by a similar reaction of cresol potassium; and *resorcin* behaves to pyro-sulphate of potassium like cresol and phenol. The resorcin compound is very readily soluble, and has not been obtained in crystals.—*Ber. Deutsch. Chem. Ges.*, 1876, p. 1715.

Precipitated Sulphur.—L. Siebold states that if hydrochloric acid be added to the solution of sulphur, in lime and water, until a slight alkaline reaction remains, the precipitated sulphur will be much superior to that obtained by using sufficient hydrochloric acid to decompose

both the pentasulphide and hyposulphite of calcium. The sulphur obtained under the last-named circumstance is coarser, heavier and darker in color, and does not exhibit the same perfect globular form under the microscope. Pure hydrochloric acid should be used to avoid the greyish tint imparted by iron sulphide, which has such a strong surface attraction for the sulphur that it cannot be removed by washing the latter with dilute hydrochloric acid.—*Phar. Jour. and Trans.*, Sept. 30.

Solution of Chlorinated Soda.—If chlorinated lime is decomposed by a solution of carbonate of sodium, the precipitate remains suspended and a clear liquid is, with difficulty, obtained by decantation. By the use of bicarbonate of sodium a crystalline precipitate of carbonate of calcium is formed, which readily subsides; a slight excess of the bicarbonate is rather advantageous.—*Apoth. Zeitung*, 1876, No. 51, from *Indust. Bl.*

Lac Ferri.—Under this name a preparation is sold, containing ferric phosphate in suspension. It is made by precipitating very dilute solutions of ferric chloride and sodium phosphate, washing carefully and removing the last traces of free acid by a little sodium carbonate. The amount of phosphate is then ascertained by drying a portion, and the moist precipitate is mixed with water until the mixture contains 1 to 1·2 per cent. of ferric phosphate.—*Phar. Zeitung*, No. 7.

Elixir of Monobromated Camphor.—Dambier recommends to dissolve 40 grams of sugar in 60 grams of 56 per cent. alcohol by the aid of heat; filter if necessary, and add, while hot, 0·50 gram of monobromated camphor. A tablespoonful of the solution, which may be aromatized to suit the taste, weighs 20 grams and contains 0·10 gram (1½ grains) of the bromine compound.

The author endeavored to effect the formation of monobromated camphor by heating bromine and camphor in the requisite proportion in the presence of alcohol and simple syrup, but although obtaining a colorless liquid, is inclined to regard it as containing mainly hydrobromic acid and unaltered camphor.—*L'Union Phar.*, 1876, December, 353.

I. Munday recommends an elixir of double the strength of the preceding, and suggests the substitution of sugar by glycerin, which retains the bromated camphor much better in water, remaining even perfectly clear with water in such proportions, which would separate a portion of the medicinal compound as a film from a saccharine elixir. He mixes 12 grams of 90 per cent. alcohol, 8 orange flower water and 10 glycerin, and dissolves in the mixture 0·30 gram monobromated camphor, by the aid of a gentle heat.—*Phar. Jour. and Trans.*, 1877. March 3.

A new mode for the treatment of antiscorbutic plants has been communicated to the Paris Pharmaceutical Society by Messrs. Dusart and Chapoteaut. The authors noticed that when fresh horse-radish root and the fresh leaves of scurvy grass and water cress are subjected to strong pressure, the resulting juice is but slightly charged with the odorous principle, nearly the whole of which remains in the press-cake, which, when macerated or displaced with alcohol, will yield a tincture strongly charged with the volatile oil contained in these vegetables. Based upon this observation, the authors recommend a modification of the process for the antiscorbutic syrup of French pharmacy, substituting the wine ordered by one-fourth its weight of stronger alcohol and three-fourths of water. The juice, expressed as above, although it contains but little volatile oil, resists putrefaction for a long time.—*Rép. de Phar.*, 1876, p. 737.

Gynandropsis pentaphylla, a plant often met with in our gardens, is, according to Prof. W. Dymock, known in India as *kanphootee*, and its juice, like that of *Polanisia icosandria*, is used in purulent discharge from the ears.

Tous-les-mois is stated, in the "Bombay Flora," to be obtained from *Canna lutea*. Prof. Dymock finds its starch to correspond with the commercial article. The rhizomes of *C. indica* and *C. discolor* yield a similar starch; but they also contain a good deal of coloring matter, from which the rhizome of *C. lutea* is almost free.—*Phar. Jour. and Trans.*, Dec. 2.

Picric Cotton has recently been employed in some of the French hospitals, for the dressing of wounds, upon the recommendation of Dr. Eug. Curie. Mr. P. Vigier has prepared it by dissolving 0·25 grams of picric acid in 25 grams of ether, or of 94 per cent. alcohol, and immersing in this solution 10 grams of clean cotton, taking care that, by moderately pressing in every direction, it is uniformly moistened, after which it requires merely to be dried at a moderate heat.—*Rép. de Phar.*, 1876, p. 705.

Alkaloid in Heliotropium europæum.—Battandier boiled about ten kilos of the plant with acidulated water, evaporated the decoction to a syrupy consistence, precipitated by strong alcohol, and evaporated the alcohol from the clear filtrate; the residue was treated with potassa and ether, the green etherial solution with water acidulated with sulphuric acid and this aqueous liquid again with potassa and ether. The

etherial solution was now colorless, and on evaporation left a thick oil, which gradually concreted into a butyraceous mass, composed of microscopic crystalline lamellæ, and afterwards formed prisms weighing about 2.5 grams. It is soluble in water and diluted acids, has a bitter taste like quinia, is white, easily turning yellow, and when heated fuses and partly volatilizes. Its salts burn with a hornlike odor, leaving a voluminous charcoal, and in solution become dark-colored and odorous.

This *heliotropia* is precipitated by tannin, potassio-iodide of mercury, potassio-iodide of bismuth, biniodide of potassium and picric acid; alkalies separate it in white oily drops; bromine converts it into a resin-like mass. Frœhde's reagent produces a brown, and potatsium bichromate with sulphuric acid a green color. It is not affected by acids, platinic or mercuric chloride. The sulphate and hydrochlorate could not be obtained crystallized. The alkaloid is poisonous, but requires larger doses than either strychnia or morphia. Heliotropium peruvianum appears to contain a larger proportion of the alkaloid. Hel. supinum and curassavicum have not yet been examined by the author.—*Rép. de Phar.*, 1876, p. 673 and 739.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM.

By Olaf Martin Oleson, Ph.G.

(*Abstract fram a thesis presented to the Philadelphia College of Pharmacy.*)

It has been the author's aim to devise a process by which the quality of the compound extract of colocynth may be approximately determined. Since the active principles of the different ingredients cannot be readily isolated and no methods are known for determining them quantitatively (perhaps scammony resin excepted), it was determined to try the effects of simple solvents upon the alcoholic extracts of the ingredients with the view of making use thereof for the determination of the purity of the officinal extract.

The different ingredients entering into the compound extract of colocynth experimented upon, were selected from the best in the market. The resin of scammony answered to the tests of the U. S. P. The extract of colocynth, as also the purified aloes, were prepared according to the "Pharmacopœia." The cardamoms were freshly powdered. The soap was obtained from good commercial "white Castile," dried on a water-bath and powdered.

The course of analysis pursued was as follows: Ten (10) grams each of the different ingredients were percolated, separately, with stronger alcohol, until the percolate passed colorless and tasteless; the

solution was evaporated and the residue dried on a water-bath and weighed. It was next treated with ether and the residue left on evaporation with petroleum benzin. The part insoluble in the latter liquid was next dissolved in solution of potassa, and the solution supersaturated with dilute muriatic acid; the precipitate, if any, was washed with water, dried and weighed. The part soluble in petroleum benzin was, also, nearly soluble in solution of potassa, but almost wholely precipitated with dilute muriatic acid. The solubilities of the five ingredients in the different menstrua will be seen in the following table, which is the average of three different experiments, agreeing closely in their results:

Ten Grams	Soluble in stronger alcohol.	Soluble in ether.	Soluble in petroleum benzin.	Insoluble in petroleum benzin.	Soluble in solution of potassa.	Not precip. by dil. muriatic acid.
Purified aloes,	8·87	·66	·26	·40	·40	.04
Ext. of colocynth,	6·63	·81	trace.	·75	·70	trace.
Cardamom,	·72	·18	·12	·06	·06	trace.
Soap,	6·00	1·76	·15	1·55	1·55	insol.
Resin of scammony,	10·00	10·00	——	10·00	10·00	10·00

The ingredients enter into the composition of compound extract of colocynth in the following proportions (following the order in which they are enumerated in the preceding table), 24, 7, 3, 6 and 6, making a total of 46 parts. By multiplying each figure, as given in the above table, with the figure indicating the proportion of the ingredient, and dividing by 46, the relative amount of each, as contained in 10 grams of the extract, is found, if the latter be treated in the manner indicated above:

	Sol. in strong alcohol.	Sol. in ether.	Sol. in petroleum benzin.	*The portion ins. in benzin is* Soluble in potassa.	Not precip. HCl.
Purified aloes,	4·63	·34	·14	·21	·02
Ext. colocynth,	1·01	·12	trace.	·11	trace
Cardamom,	·05	·01	·01	trace.	trace.
Soap,	·79	·23	·02	·20	
Res. scammony,	1·30	1·30		1·30	1·30
Total,	7·78	2·00	·17	1·82	1·32

The compound extract of colocynth was made from the ingredients used in the above experiments, and was then subjected to the same treatment, three assays being made. The officinal extract, as obtained from a manufacturer of undisputed reliability, was likewise assayed twice; the results (averages) obtained in these assays as compared with the theoretical results calculated from the experiments upon the simple substances, will be found in the following table:

Ten grams Comp. extr. colocynth,	Soluble in strong strong alcohol.	Alcoh. extract sol, in ether.	*Etherial extract.* Sol. in benzin.	Insol in benzin.	Insoluble portion dissolved in KHO, then acidulated by HCl. Remains dis.	Precip.
Theoretical Yield,	7·78	2·00	·17	1·83	1·32	·51
Own make,	7·11	4·12	·90	3·00	2·55	·45
Manufacturer,	7·70	4·35	1·00	3·25	2·13	1·12

On comparing the results in the last table, it will be seen that they do not exactly correspond. The amounts soluble in stronger alcohol are nearly alike. The ether, on the contrary, dissolved twice as much when the ingredients were all mixed together as when they were treated separately. In order to verify this by direct experiment, I took one gram of the compound extract of colocynth, also one gram of each of its ingredients, put them separately into six two-ounce vials, and treated them respectively with one and a half fluidounces of ether, shaking them occasionally for two days. The ether was next poured off and evaporated, and by weighing, it was found that the soluble portion of the compound extract of colocynth weighed a little more than twice as much as the sum of the soluble parts of the ingredients, treated separately, calculated in the same proportion as they exist in the compound extract. The petroleum benzin, as well as the solution of potassa, dissolved more of the compound extract of colocynth than they did of its component parts, when treated with them separately; while the dilute muriatic acid did not throw down as much precipitate as was calculated, from the amount of scammony resin, which was expected to be the only principle remaining in solution. It will be seen from the above, that there is something else in this extract, besides the resin of scammony, that is soluble in solution of potassa, and not precipitated by dilute muriatic acid. It may be that the soap, or some of the other ingredients, act as solvents.

I tried to separate, from the compound extract, the aloes, soap and part of the extract of colocynth, by treating it with water; as the two first are almost entirely soluble, and the latter partially so, in that menstruum. By experiments it was found that nearly all of the compound extract of colocynth was dissolved, which was undoubtedly due to the solvent action of the soap.

A METHOD of DETECTING and ESTIMATING CASTOR and OTHER FIXED OILS in BALSAM COPAIBA.[1]

By Dr. Muter.

This oleo-resin, commonly but wrongly termed a balsam, has been said, in books, for many years back, to be subject to admixture with

[1] Read before the Society of Public Analysts, November 15th, 1876. From "The Analyst," November 30, 1876.

fixed oils, especially castor oil. The "British Pharmacopœia" furnishes a qualitative method of examination, but the tests are, in practice, totally insufficient, as the exact degree of rectification of the benzol (an important point) is not stated, and the difference between a pure balsam stain and that with a small percentage of oil is very slight, unless the two are observed side by side. The other methods which have been proposed may be summarized as follows:

1. Pure balsam gives a translucent and not an opaque emulsion, with strong solution of ammonia.

2. Pure balsam, if boiled with water for some hours, leaves a tenacious resin.

3. The specific gravity.

The latter test is entirely fallacious, owing to the great variation in commercial samples, and the others, though possibly characteristic with large admixtures, fail with anything under 20 per cent.

Observing the close affinity between copaivic and pinic acids, it struck me that advantage might be taken of the difference of solubility of the sodium soaps in certain menstrua. A very good solvent for sodium pinate has been discovered by M. Barfoëd to be a mixture of five parts, by volume, of *absolute* ether, and one part *absolute* alcohol, which, moreover, only dissolves sodium oleate to an exact extent, corresponding to 1 in 1000 of oleic acid. I will not occupy space by detailing, at length, the numerous experiments on a great number of samples of balsam, varying in age and color, from every known commercial source, but the whole thing ended in the certain conclusion that besides the essential oil (which is dissipated in the process of analysis) good commercial balsam contains only copaivic acid, which forms a sodium salt, instantly soluble in the ether-alcohol mixture, and a little altered resin not so readily saponifiable, forming a salt only slowly soluble. The amount of this second resin I have found to vary slightly, and, in very old samples, especially of Maranham balsam, may sometimes amount to 5 per cent., although usually really less. Going upon the principle that performing any official analysis the lowest commercial standard should be taken, I have adopted six per cent. as the highest possible quantity of the second resin ever existing in any sample of balsam still having a trace of odor remaining.

This wide standard may sometimes lead to an under-estimation of the oil by two or three per cent., but renders any over-estimation impossible.

The actual process I employ is as follows: 3 to 4 grams of the sample are weighed into a clean, dry flask, and saponified on the water-bath with 50 cc. of alcohol and a lump of caustic soda, weighing not less than 5 grams. When all is dissolved water is added, and the whole washed into a half-pint basin so as to nearly fill it, and evaporated to 100 cc. over a low gas flame. Dilute sulphuric acid is then added until the whole just becomes permanently turbid, and then solution of caustic soda is dropped in till it *just clears* again. By this means a solution is obtained with the least possible excess of alkali, and with a good amount of sodium sulphate. The whole is now evaporated to *perfect dryness*[1] on the water-bath, stirring towards the end, so that the sulphate may mix with the soaps and produce an easily pulverulent residue. The residue is removed from the basin into a small, wide-mouthed, stoppered bottle, and treated with 70 cc. of ether-alcohol, and well shaken up. As soon as it is fairly settled the fluid is filtered off through a *quick* filter, and this is repeated with two successive quantities of 70 cc., making 210 cc. in all of the solvent used. The residue in the bottle and on the filter now consists of sodium oleate and sulphate if the balsam be impure, and of the latter only if pure, with a little trace of the insoluble resin soap already referred to. The contents of the bottle and filter are then dissolved in warm water, and, after heating until all smell of ether is gone, the whole is boiled, freely acidulated with hydrochloric acid and set to cool. If, when cold, nothing but a few specks of brown resin should rise to the surface, the balsam is pure, but if an oily layer be formed, it is adulterated, and the smell of the separated oleic acid will at once determine whether it is actually castor oil or not. In the case of the presence of oil, two grams of pure and dry white wax are added, and the whole heated till the wax melts with the oleic acid. On cooling a solid cake is formed, which is detached from the side of the beaker and the fluid below passed through a filter. The cake is once more melted in boiling water, cooled, detached, dried by gentle pressure in blotting paper, put into the water oven in a weighed

[1] The best way to insure absolute dryness is to moisten the apparently dry residue with a few drops of absolute alcohol and again dry.

platinum dish till dry, and then weighed, and the weight of the wax used deducted. The beaker, filter and rod, etc., used are, if at all dirty; dried, extracted with ether, and the residue left, after evaporation weighed and added to the total.

The calculation is then performed as follows :

1. To the weight in grams found add ·20 for loss of oleic acid in solvent, and then say as

95 : 100 :: total oleic acid.

2. Calculate to per cent. from the quantity taken, and from the total per centage deduct six per cent. for possible altered resin in the balsam.

Out of the whole number of samples I have done, I have selected the following twelve as being fair representations of the degree of accuracy obtainable by the process. The error, owing to the correction, of course, increases with the amount of oil present, but it is always an error in the direction of under-estimation, which is the great point for public analysts.

Nature of Sample.	Calculated.	Found.
Para (pale)	Pure	No oil drops.
Para (pale)	23·60 per cent. castor	23·50
Old Para (dark)	Pure	No oil drops
Old Para (dark)	51·0 per cent. castor	50·0 per cent.
Carthage (medium)	Pure	No oil drops.
Carthage (medium)	21·5 per cent. castor	21·20
Maranham (pale)	Pure	No oil drops.
Maranham (pale)	26·5 per cent. castor	26.27
Old Maranham (darkish, very little odor)	Pure	No oil drops.
Old Maranham (darkish, very little odor)	47·3 per cent. castor	46·4
Para (fine pale)	Pure	No oil drops.
Para (fine pale)	21·4 per cent. lard oil	20 9

In conclusion, I may say that the process, although it looks formidable, is in practice very simple, and for all ordinary purposes, if the beaker be well scraped out, the weight of the main cake may be taken as sufficient to give an analysis true within 3 per cent. *below* the real amount, which is accurate enough for public purposes, and saves time and the expense of the extra ether. Unless oil actually floats and *remains*, *on cooling*, *in fluid drops*, after adding the hydrochloric acid, the sample may be passed as good.

When working on three to four grams, with an admixture of not over 25 per cent., the errors due to loss of oleic acid and insoluble

resin soap respectively so nearly balance each other that any correction is unnecessary, and the actual amount of oleic acid found may be taken as correct within a per cent.—*Phar. Jour. and Trans.*, Dec. 30, 1876.

VARIETIES.

Notes on Perfumery. By Wm. Saunders, London, Ont.[1]—*Alcohol.*—One of the first requisites in the manufacture of good perfumes is pure alcohol, free from fusel oil or other foreign flavor. This purer grade of spirit is known in commerce as pure spirits, silent spirits, or deodorized alcohol, and may readily be distinguished from ordinary alcohol by the absence of that peculiar pungency of odor which is present to a greater or less extent in most commercial samples.

Ottos or Essential Oils.—It is of the greatest importance that these should be strictly pure and of the finest quality.

Pomades.—From these are prepared some of the simple extracts in the appended formulas, such as jasmine, tuberose, and cassia. The quality must be that known as triple pomade. The simple extracts are prepared as follows: one pound of the pomade is cut in small pieces and placed in a bottle of sufficient capacity, in which is put a pint of pure spirit. Place the bottle suitably stoppered in a water-bath, and apply heat sufficient to barely melt the pomade, shake well together, and repeat the shaking frequently until the fatty matter solidifies. In this way the pomade will be reduced to a finely divided or granular state, permeated thoroughly by the spirit. Allow this to stand for several days, giving it an occasional shake, then drain off the liquid extract into another bottle; if this fall short of a pint repeat the operation with a sufficient quantity of alcohol to make up to this measure. By subsequent and similar treatment, a second and even a third quantity of extract may be made, which although much weaker, will be found useful in the preparation of cheaper perfumes.

Extract of Orris.—Seven pounds of finely ground orris root of good quality is treated by percolation with pure alcohol until one gallon of extract is obtained.

Extract Vanilla.—Four ounces of vanilla beans of the finest quality, powdered finely in a mortar with a sufficient quantity of dry white sugar (from four to six ounces), pack in a percolator, and percolate with proof spirit until one gallon is obtained.

Extract Tonka.—Take one pound of tonka beans, reduce to a coarse powder, and percolate with alcohol to make one gallon.

Extract Musk.—Take of pure grain musk of the first quality two drachms. Mix half an ounce of liquor potassæ with four ounces of proof spirit, and triturate the musk with this mixture until it is thoroughly softened, and reduced to a creamy state; add enough proof spirit to make up about one pint; stir well, then allow the

[1]The introductory part of this paper contains some historical notes and general remarks on perfumery which will be read with interest in the Proceedings of the American Pharmaceutical Association, 1876. We can make room for the practical part only.—Editor.

coarser particles to subside, and pour off the supernatant fluid. Rub the coarser portions again with a fresh portion of spirit, proceeding as before, and repeat the process until the musk is entirely reduced, and the quantity of extract measures three pints. Allow this to stand for a fortnight with occasional shaking, when it will be ready for use.

Extract Styrax.—Eight drachms of styrax balsam dissolved in one pint of alcohol.

Benzoic Acid.—Only that prepared from gum benzoin should be used.

FORMULAS.

Jockey Club.

Ext. Jasmin,	5 ounces
" Orris,	20 "
" Musk,	7 "
" Vanilla,	1½ "
Otto Rose, Virgin,	1½ drachms
" Santal Flav.,	1½ "
" Bergamot,	2½ "
" Neroli Super.,	40 minims
Benzoic Acid,	2 drachms

Pure Spirit, sufficient to make four pints.

In this, as well as in all the following extracts, before adding the last portion of the spirit, replace as much of it with water as the perfume will bear without becoming milky, which will vary from two to eight ounces or more. This addition will make the perfume softer.

Ylang Ylang.

Ext. Tonka,	3 ounces
" Musk,	4 "
" Tuberose,	4 "
" Cassia,	4 "
" Orris,	8 "
Otto Orange, *new*,	2 drachms
" Neroli, Super,	½ drachm

Pure Spirit, sufficient to make four pints.

Tuberose.

Ext. Tuberose,	24 ounces
" Musk,	4 "
" Jasmin,	1 "
Otto Rose, Virgin,	1 drachm
" Neroli, Super,	10 minims
Benzoic Acid,	2 drachms

Pure Spirit, sufficient to make four pints.

Moss Rose.

Otto Rose, Virgin,	2 drachms
" Santal Flav.,	2 "
Ext. Musk,	12 ounces
" Vanilla,	4 "
" Orris,	2 "
" Jasmin,	4 "
Benzoic Acid,	1 drachm

Pure Spirit, sufficient to make four pints.

Victoria.

Otto Rose, Virgin,	2 drachms
" Neroli, Super,	2 "
" Bergamot,	4 "
" Coriander,	16 minims
" Pimento,	24 "
" Lavender (English),	16 "
Ext. Jasmin,	2 ounces
" Orris,	16 "
" Musk,	2 "
Benzoic Acid,	2 drachms

Pure Spirit, sufficient to make four pints.

Ess. Bouquet.

Ext. Musk,	4 ounces
" Tuberose,	2 "
Otto Rose, Virgin,	1 drachm
" Bergamot,	1½ "
" Neroli, Super,	½ "
" Verbena, *true*,	8 minims
" Pimento,	10 "
" Patchouly,	3 "
" Red Cedar Wood, *true*,	½ drachm
" Lavender, English,	12 minims

Pure Spirit, sufficient to make four pints.

Wood Violet.

Ext. Orris,	12 ounces
" Tuberose,	2 "
" Jasmin,	1 "
" Musk,	4 "
Otto Bergamot,	2 drachms
" Lavender, English,	1 drachm
" Verbena, *true*,	10 minims
" Amygd. Amar.,	12 "
" Coriander,	6 "
" Sweet Flag,	4 "
" Bay Leaves,	4 "
Benzoic Acid,	$1\frac{1}{2}$ drachm

Pure Spirit, sufficient to make four pints.

West End.

Ext Orris,	12 ounces
" Jasmin,	4 "
" Musk,	8 "
" Cassia,	4 "
" Styrax,	1 "
Otto Bergamot,	3 drachms
" Verbena, *true*,	15 minims
" Neroli Super.,	$\frac{1}{2}$ drachm
" Rose, Virgin,	1 "
" Red Cedar Wood, *true*,	1 "
Benzoic Acid,	1 "

Pure Spirit, sufficient ro make four pints.

White Rose.

Otto Rose, Virgin,	2 drachms
" Red Cedar Wood, *true*,	6 minims
" Patchouly,	4 "
" Orange, *fresh*,	$\frac{1}{2}$ drachm
Ext. Tuberose,	2 ounces
" Orris,	2 "
" Jasmin,	2 "
" Musk,	2 "
Benzoic Acid,	1 drachm

Pure Spirit (to which four ounces of rose-water has been added), sufficient to make four pints.

Rondeletia.

Otto Lavender, English,	1 ounce
" Cloves,	$\frac{1}{2}$ "
" Bergamot,	$\frac{1}{4}$ "
" Rose Geranium, *Turkey*,	2 drachms
" Cinnamon, *true*,	20 minims
" Rose, Virgin,	10 "
" Santal Flav.,	1 drachm
Ext. Musk,	2 ounces
" Orris,	4 "
" Vanilla,	2 "
Benzoic Acid,	1 drachm

Pure Spirit, sufficient to make four pints.

Patchouly.

Otto Patchouly,	2 drachms
" Santal Flav.,	40 minims
" Rose, Virgin,	40 "
Ext. Musk,	8 ounces
" Orris,	8 "
" Vanilla,	4 "
" Styrax,	2 drachms

Pure Spirit, sufficient to make four pints.

Musk

Ext. Musk,	1 pint
" Orris,	6 ounces
" Vanilla,	2 "
" Styrax,	2 drachms
Otto Santal Flav.,	1 drachm
" Bergamot,	2 drachms
" Neroli, Super,	10 minims
" Patchouly,	12 "
" Lavender, English,	15 "
" Cinnamon, *true*,	6 "

Pure Spirit, sufficient to make four pints.

Spring Flowers.

Ext. Orris,	4 ounces
" Jasmin,	4 "
" Musk,	4 "
Otto Bergamot,	2 drachms
" Neroli, Super,	$\frac{1}{2}$ drachm
" Verbena, *true*,	10 minims
" Red Cedar Wood, *true*,	1 drachm
Benzoic Acid,	1 "

Pure Spirit, sufficient to make four pints.

Stephanotis.

Ext. Cassia,	4 ounces
" Tuberose,	4 "
" Jasmin,	2 "
" Musk,	8 "
" Orris,	8 "
" Tonka,	3 "
Otto Rose, Virgin,	1 drachm
" Neroli Super.,	$\frac{1}{2}$ "
Benzoic Acid,	1 "

Pure Spirit, sufficient to make four pints.

Millefleurs.

Otto Rose, Virgin,	1 drachm
" Red Cedar Wood, *true*,	1 "
" Orange, *true*,	1 "
" Pimento,	20 minims
Ext. Orris,	6 ounces
" Jasmin,	2 "
" Styrax,	1 ounce
" Tonka,	4 ounces

Pure Spirit, sufficient to make four pints.

New-Mown Hay.

Ext. Tonka,	25 ounces
" Musk,	6 "
" Orris,	8 "
" Vanilla,	1 "
" Styrax,	1 "
Otto Bergamot,	1 drachm
" Neroli Super.,	15 minims
" Rose, Virgin,	10 "
" Cloves,	6 "
" Lavender, English,	10 "
" Patchouly,	10 "
" Santal Flav.,	1 drachm
Benzoic Acid,	1½ "

Pure Spirit, sufficient to make four pints.

Frangipanni.

Ext. Orris,	4 ounces
" Tuberose,	2 "
" Musk,	4 "
" Vanilla,	2 "
" Jasmin,	1 "
" Styrax,	1 "
Otto Neroli Super.,	1 drachm
" Rose, Virgin,	½ "
" Santal Flav.,	1 "
" Red Cedar Wood, *true*,	1 "
" Pimento,	½ "
" Cassia,	20 minims
" Bergamot,	½ drachm
" Ginger,	4 drops
" Lavender, English,	6 "
Benzoic Acid,	2 drachms

Pure Spirit, sufficient to make four pints.

Clove Pink.

Ext. Jasmin,	12 ounces
" Orris,	12 "
" Musk,	8 "
Otto Rose, Virgin,	1 drachm
" Cloves,	2 drachms
" Neroli Super,	1 drachm
" Pimento,	10 minims
" Patchouly,	20 "
" Santal Flav.,	2 drachms
Benzoic Acid,	1 drachm

Pure Spirit, sufficient to make four pints.

Violet.

Ext. Orris,	2 pints
" Tuberose,	4 ounces
" Vanilla,	3 "
" Musk,	3 "
" Tonka,	2 "
Otto Rose, Virgin,	1 drachm
" Neroli Super.,	40 minims
" Pimento,	12 "
" Bergamot,	1 drachm
Benzoic Acid,	1 "

Pure Spirit, sufficient to make four pints.

Mignonette.

Ext. Orris,	12 ounces
" Tuberose,	4 "
" Vanilla,	4 "
" Musk,	2 "
Otto Rose, Virgin,	1 drachm
" Neroli Super.,	1½ "
" Pimento,	12 minims
Benzoic Acid,	1 drachm

Pure Spirit, sufficient to make four pints.

Discrimination of Fibres in Mixed Fabrics (Silk, Wool, Flax, Hemp, Cotton and Phormium). [*Pinchon, polyt. Zeitsch.*]—Treat with caustic soda or potassa:

A. The fibres are attacked and partly dissolved:
- *a.* Chloride of zinc does not dissolve:
  - 1. Nitric acid colors yellow = *Cotton.*
  - 2. Nitric acid does not color = *Flax.*
- *b.* Chloride of zinc dissolves some of it:
  - 1. Lead salts do not color black:
    - α. Picric acid colors yellow = *Silk.*
    - β. Picric acid does not color = *Cotton.*
  - 2. Leadsalts color part of it black:
    - α. Caustic potassa dissolves some of the fibres insoluble in zinc chloride = *Wool.*
    - β. The remaining fibres are soluble in ammonio-oxide of copper = *Silk, cotton.*

B. All fibres are dissolved in the lye:
- *a.* Chloride of zinc does not dissolve:
  - 1. Chlorine water, followed by ammonia, does not color:
    - α. An alcoholic solution of fuchsin (1-20) dyes red, but the color

can be washed off, and caustic potassa does not color the fibres yellow = *Cotton.*

β. The red color (by fuchsin) can not be washed off; the fibres are colored yellow by caustic potassa:

y. Iodine and sulphuric acid color yellow = *Hemp.*

z. Color blue = *Flax.*

2. Chlorine water and ammonia colors reddish-brown, and the fibres are colored red by nitric acid = *Phormium.*

b. Chloride of zinc dissolves part of it or not at all:

1. Insoluble; colored black by lead salt = *Wool.*

2. Partially soluble.

α. The soluble part is not blackened by lead salt = *Silk.*

β. The insoluble is blackened by lead salt = *Wool.*

c. Chloride of zinc dissolves everything in the cold; the alkaline solution is not blackened by lead salt = *Silk.*—H. M. W. from *Ny Pharm. Tid.*, 1877, p. 45.

Variations in the Use of Medicines.—Some interesting statistics are given in the "Archives Generales" on the amount of some new remedies supplied by the medical men of the Assistance Publique. In 1869, the Central Pharmacy distributed 141 kilograms of chloroform against 308 kilograms in 1875. Chloral showed a still more rapid increase. In 1869 only 5 kilograms were required; while in 1875 360½ were consumed. Iodoform, from 250 grams in 1859, rose to 28 kilograms in 1875; bromide of potassium rose from about 3 kilograms in 1855 to nearly 800 kilograms in 1875; opium showed but small variations, but the same cannot be said of morphia, no doubt from the general use of hypodermic injections, for, from 275 grams in 1875 the amount rose to the enormous quantity of more than 10,000 grams. A very large augmentation in medicinal substances was also seen in the alcohol used in the hospitals and infirmaries of Paris. Thus, in 1855, the Assistance Publique only appropriated 1,270 litres of alcohol to the use of the sick, while, in 1875, 37,578 litres were used. The same increase is noticeable in rum and red wine. The use of white wine was sensibly diminished The use of leeches has gone nearly out of fashion. In 1834 and the following years up to 1837, the number of leeches employed exceeded a million; in 1874 the number had fallen to 49,000 only. The consumption of sulphate of quinia is on the increase, and represents 53,734 grams in 1875 against 24,525 in 1855.—*Med. and Surg. Rep.*, Feb. 24.

Test of Bile.—Dr. James Sawyer says, in a note to "The Lancet" on the use of iodine as a test for bile in urine: "I have used this test for nearly ten years, my first knowledge of it having been gained from Flint's 'Practice of Medicine.' I have found it best to place two or three drops of iodine liniment in a test-tube, and then to add about two drachms of the suspected urine. If the coloring-matter of bile be present the mixture will assume, on agitation, a brilliant sea-green color. This is a ready and reliable test, and one which I have long preferred to all others with which I am acquainted.—*New York Med. Jour.*, Feb.

Gilding and Silvering of Glass and Porcelain.—E. Hansen has patented the following process: Sulphur is dissolved in oil of spike lavender until it has a semi-liquid consistence; this is mixed with an etherial solution of chloride of gold or of platinum, and the mixture evaporated to the consistence of paint. The surface to be gilt or silvered is then covered with the mixture and the object carefully heated in a muffle, whereby the volatile substances are expelled and the metallic gold or platinum fastened upon the glass or porcelain. The surface, thus metallized, is afterwards plated in the usual manner with solutions of gold, silver or copper, and with the aid of a galvanic battery.—*Chem. Centralbl.*, 1876 No. 50.

The coloring for butter and cheese, which is very extensively employed in Denmark, is made by intimately mixing one part of annatto with half its weight of alcohol, digesting for a week, and then boiling with three to five parts of oil, until the annatto forms dark-brown granules and ceases to impart color to the oil. The price depends in part on the kind of oil employed—rapeseed, olive and other oils being used. To the cheese coloring a little turmeric is usually added. This coloring was first made by N. Blumensaadt, of Odense, but is now largely manufactured at Copenhagen.—*Phar. Zeitung.* No. 5.

Ustilago maidis, the corn-smut or corn ergot, which has been chemically examined by Mr. Ch. H. Cressler ("Am. Jour. Phar.," 1861, p. 306), has been repeatedly recommended for medicinal use, and is again brought forward by Dr. C. Henri Leonard, who has used it in the form of fluid extract in a case of labor, and contrasts its action with that of ergot; the uterine contraction of the latter is regarded as tonic, that from Ustilago seems to be regularly intermittent. If this should be proven to be a characteristic of its action, it will prove even more serviceable in labor than ergot. It was given in the dose of a teaspoonful, repeated in ten minutes; and in spermatorrhœa it proved serviceable in doses of 10 to 20 drops.—*New Prep.*

The Hypnotic Action of Lactic Acid and Lactate of Soda.—Jeruselimsky has tried tried the effect of these substances in animals and in well and sick human beings. The experiments in animals (nine dogs and nine rabbits) gave no definite results, as these animals are not good subjects for the purpose. In himself, two healthy women and three men, the author has obtained only moderate effects with doses varying from 2 drachms to ½ ounce. Lactic acid was administered in twenty-two cases of insomnia in the course of the most different diseases, but especially in hysteria, and the effect was incomplete in only a few cases. In most cases quiet sleep occurred a half to one hour after administration. The remedy was continued from two weeks to two and one half months (two or three times weekly). In combination with morphia, a much smaller quantity of the latter is required. Thus, an hysterical woman, who had been taking as much as two grains of morphia per day, slept five hours after taking one half grain of morphia with one-half ounce

lactate soda.—*Supplement to Med. Chir Centralblatt*, 1876.—*N. Y. Med. Jour.*, Feb., 1877.

The Sudden Checking of Opium Eating.—The eminent Sir Robert Christison, after a large experience in the treatment of such cases, says that no good can be done by "gradual reduction," and that it can be safely left off abruptly, even after many years' indulgence. He recommends bromide of potassium to allay irritability, and chloral to procure sleep. For the first three days the patient suffers from great depression, loathing, sickness and vomiting. By the fourth night he falls asleep and awakes refreshed, and in most cases the progress afterward is very satisfactory. There is, however, great danger of a relapse. Should diarrhœa supervene, suppositories of morphia should be ordered.—*South. Med. Rec.*, Feb.

Expressed Oils of Cherry and Plum Seeds.—Guyot recommends the preparation by expression of the fixed oils which are contained in the seeds of the cherry and the yellow plum (*mirabelle*), particularly in those districts where the liquor known as *kirschenwasser* is manufactured. He obtained by extraction with ether 6·4 per cent. of oil from the former and 10·7 per cent. from the latter seeds. The cherry oil is limpid, golden-yellow, and has a decided almond odor, which disappears on exposure after some time. The plum oil is similar, but darker yellow, and of a stronger almond odor.—*Rép. de Phar.*, 1876, p. 678.

The Dispensing of Copaiba Resin.—Alfred Balkwill proposes the following form of exhibiting copaiba resin, which gives satisfaction to the prescriber and patient. It is no trouble to make, and the mixture, in elegance of appearance, permanence and therapeutic action, is preferable to all other forms.

℞.	Resinæ Copaibæ	ʒiss
	Olei Amygd. dulc	ʒiv
	Mucilag. Acaciæ	℥iss
	Liquor. Potassæ	ʒss
	Olei Cinnamomi	gtt. vi
	Aquæ, q. s, ad	℥vi

A sixth part three times a day.

Dissolve the resin in the oil, with gentle heat, then add the potassa solution, and form an emulsion.—*Phar. Jour. and Trans.*, Nov. 25, 1876.

MINUTES OF THE PHARMACEUTICAL MEETING.

MARCH 20TH, 1877.

The meeting was organized by electing Mr. S. S. Bunting to the chair. C. W. Hancock officiated as Registrar *pro temp.*

Prof. Maisch presented a copy of Lindley's "Natural System of Botany," from D. B. Smith; also, a pamphlet from Dr. H. C. Wood entitled, "The United States Pharmacopœia, and the American Medical Association;" also, samples of Calcutta catechu and gambir, from Messrs. Behn, Meyer & Co.

Mr. Alex. H. Jones presented, through Prof. Remington, from Messrs. Powers & Weightman, a fine collection of argols from various sections of Europe.

Prof. Maisch read a paper by Mr. L. Wolff on "Unguentum hydrargyri nitratis" (see page 162). Dr. Pile said he had followed Mr. Rother's formula of making it with lard, first adding the excess of nitric acid and afterwards the nitrate of mercury, and found it very successful. He also questioned whether oleic acid could be procured at all times of sufficient purity. Prof. Remington thought the process of Rother all that can be desired, and the substitution of three-fourths lard oil for the lard a wise selection, his experience being similar to Dr. Pile's; but he thought that Mr. Wolff's views opened an interesting point in regard to the change in oleic acid and the ointment under consideration.

Mr. C. Bullock spoke of the citrine ointment, as formerly prepared by John Bell of London, as being particularly noted for its fine appearance, and thought it due to the manipulation in beating it up well before and while it congealed.

Dr. Pile requested the members to inform the Committee on Adulterations of the National Association of any sophistications that may come under their notice, and endeavor to accompany their communications by specimens.

Prof. Remington said that Prof. Painter, the chairman of the committee referred to, expressed a wish that some of the members would take up for their investigation the amount of extractive matter left after the evaporation of some of the important officinal tinctures. Prof. Maisch did not see how any positive results could be obtained, since slight variations in the menstrua could influence the result aside from the differences naturally existing in the drugs.

C. W. Hancock presented a sample of an ocher yellow color, purchased for oxide of antimony, which, without resorting to chemical test, the general expression of the members present declared it not to be, at least not pure enough for medicinal use.

Mr. Bullock mentioned that their house had recently received from a house in Baltimore a sample of nitrate of potassium, which by its appearance aroused his suspicion, and upon making an examination found about 25 per cent. of chloride of potassium. This salt can now be obtained at a low figure, it being one of the products from the Stassfurt (Germany) mines.

Dr. Miller exhibited a sample of so-called Egyptian saffron, which Prof. Maisch pronounced to be carthamus. He also alluded to an adulteration of saffron with carbonate of calcium, which is again practised, after it was exposed seven years ago (see "Am. Jour. Phar.," 1870, p. 318 and 390).

Dr. Pile thought the sale of genuine saffron to be on the increase, as compared with the sales a number of years ago.

Prof. Maisch said that in 1871 he investigated the African saffron of the American market, and found it to be carthamus, with the exception of one sample, which Mr. J. R. Jackson correctly referred to Lyperia crocea (see "Proc. Amer. Phar. Assoc.," 1873, p. 487).

Mr. Lowe exhibited samples of yellow wax, in 1 oz. cakes, prepared by placing rectangular tin frames upon plate-glass, pouring in some melted wax, and when this had hardened, enough more to produce a cake weighing about one ounce.

Mr. Bullock, having examined some white wax, found the congealing point below that generally given; and on inquiry being made from the consignees, it seems not

improbable that the fusing point may vary from 5° to 10° F., being influenced by the latitude in which the wax was collected. He urged members to procure specimens of pure wax from different countries to settle this point.

Mr. A. P. Brown presented samples of syrups, made in accordance with the suggestions of one of the students, by percolating the drug with simple syrup or with simple syrup and alcohol, in proportion of 15 fluidounces of the former to 1 of the latter. They all appeared to possess the virtues of the drugs, and presented a fine appearance; the preparing of 1 pint, in some cases, required 8 to 10 days. Prof. Remington said the only question that occurred to him, as to whether percolation with cold syrup would exhaust the active principles of the drug. Several members thought that the solvent power of the sugar would have that effect.

Mr. Wright mentioned as having prepared syrup of orange peel by rubbing the fresh orange peel with sugar, and then percolating with sufficient water, as making a very fine syrup that will bear dilution with its own bulk of simple syrup.

Mr. Wright exhibited a root which had been sold here as calumba. It occurred in longitudinal slices, resembling gentian, but of a much lighter and more yellow color. Prof. Maisch pronounced it to be the root of Frasera Walteri, the so-called American calumba.

Prof. Maisch raised the question when measures were first introduced into pharmacy. He showed a number of old English works in which the signs ℥ and ℔ were used for both liquids and solids; also, some stating that great uncertainty existed, and that they were then interpreted by some as meaning measures, by others weights only. He hoped the subject would be further investigated.

Mr. Gerhard mentioned as having utilized the cans in which preserved fruits are sold, for ointments, etc., by melting off the top and then melting the bottom off others to form a top for the former; a sample was presented.

Mr. Wright said that he had been so using them, and found them superior to the glazed ware for ointments, which did not become rancid so readily.

Dr. Pile mentioned that he had experimented with cloves, exhausting them with gasolin (3 qts.), and obtained (from quantity?) 4 ounces of oil of fine flavor and greenish color.

Dr. Miller thought that the yield mentioned at the last meeting in regard to obtaining 3 lbs. essential oil from 25 lbs. of cubebs, must have been an error, and was going to convince himself again of the fact. Two samples of oil of ylang-ylang were exhibited by Dr. Miller; there was a marked difference in the odor.

C. W. Hancock, Registrar *pro temp.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Philadelphia College of Pharmacy.—The lectures of the fifty sixth course closed on Wednesday, Feb. 28th, and the examination commenced March 1st, and lasted until Tuesday, March 6th. The written examinations were on the following subjects, one afternoon being allowed to each branch:

QUESTIONS ON CHEMISTRY.

1. What is the proper chemical name for Borax? Give the sources from which it is derived, its composition and physical properties.

2. How is Chlorine obtained? Explain the process and give the formula for the reactions which take place. State its physical and chemical properties and what officinal metallic compounds free Chlorine is used to produce, with chemical formulæ of the reactions.

3. What are the proper chemical names for Calomel and Corrosive Sublimate? Give and explain the mode of preparation of each. State the distinctive chemical and physical properties and the differences in their medicinal activity.

4. What are the best antidotes for the Alkalies? The mode in which they act, and state which can be usually most promptly obtained.

5. What are the compounds formed in fermentation of the juices of fruits? State what is the substance from which they are derived and explain their formation.

6. What are the antidotes for Arsenic? State the form in which they are the most reliable.

7. What is the action of pure water and air on Metallic Lead? What impurities generally exist in river water and prevent this action?

8. What is Alumen, U. S. P.? Give its mode of preparation, properties and composition.

9. What are the forms in which Sulphur is given internally as a medicine? Give the mode of preparation of each.

10. By what test may Nitric Acid be detected as an impurity in Oil of Vitriol? Explain the changes which take place.

11. What are the changes which take place in a solution of Ferrous Sulphate when exposed to the action of the air?

QUESTIONS IN MATERIA MEDICA AND BOTANY.

1. Give the botanical characters of the natural order of *Ranunculaceæ*, and of its two suborders. Name the officinal drugs obtained from each suborder.

2. Which *officinal roots* are obtained from plants of the natural order of *Gentianaceæ?* Give the names and habitat of the plants; point out the physical differences of the roots; state how their solutions are affected by iron salts; name the characteristic principles found in the roots, and widely diffused organic principles absent from them. What are their medicinal properties?

3. Give the name, natural order and habitat of the plant yielding *Jalap;* describe the part used in medicine, as to its physical properties and structure; name the active principle, its properties and chemical relations, and state how it may be distinguished from other allied principles.

4. Give the names and native countries of the *lauraceous trees* yielding officinal *barks;* describe the principal physical and structural characteristics and enumerate the medicinally important principles of these barks.

5. How may the officinal *narcotic leaves* be distinguished from each other?

6. Which plants of the *Aurantiaceæ* yield officinal drugs? Describe the *pericarps* obtained from them, as to their physical properties, structure and characteristic principles.

7. Give the name, natural order and habitat of the plant yielding *sabadilla seeds;* describe the physical properties and structure of the seeds and give the outlines of the process for obtaining their alkaloid.

8. What is *Lupulin?* From what plant and from which part is it obtained? Name its physical properties, structural characteristics, important constituents and medicinal properties.

9. Give the name, natural order and habitat of the plant from which *oil of wintergreen* is obtained. Describe the oil, its chemical constitution and the manner in which the usual adulterations may be detected.

10. Give the name, class and native country of the *muskdeer.* Where is the *musk sac* located, and what are the physical and structural characteristics of its genuineness? How may adulterations of *musk* be detected?

QUESTIONS IN THEORETICAL AND PRACTICAL PHARMACY.

1. Two hundred and four grams of an officinal substance lose by immersion in "stronger Alcohol" two thousand four hundred and fifty-one centigrams. What is the substance? Show the method of obtaining the answer.

2. Name the units of Measure, Capacity and Weight in the Metrical System, and state briefly how they were obtained. Give the approximate value of the fluid-ounce in cubic centimetres, of the Kilogram in avoirdupois weight, of the Litre in apothecaries' measure.

3. Define the process and state the objects of sublimation. How does it differ from distillation?. Mention three well-known substances found in Pharmacy in a sublimed condition, and describe the appearance of each.

4. Explain the theory of the vinous fermentation in grape juice, the name and chemical composition of the substance deposited in wine casks. How is its peculiar acid isolated?

5 Name the substances used in preparing Ether, Chloral hydrate and Glycerin. Give, briefly, their mode of preparation, with the characteristic properties of each.

6. Give the strength and doses of all of the liquid Aconite preparations (officinal and otherwise) that you know of. What is the physical test for Aconite, and what is its active principle?

7 State the proportions and doses of the officinal liquid preparations of Opium.

8 Name the ingredients used in the following preparations of the United States "Pharmacopœia": Confectio Opii, Extractum Ergotæ Fluidum, Ferri et Quiniæ Citras, Infusum Rosæ Compositum, Liquor Iodinii Compositus, Potassii Acetas, Pulvis Rhei Compositus, Spiritus Ammoniæ Aromaticus, Syrupus Rhei and Vinum Aloes.

9. Give the officinal process for preparing Veratria, the tests for it, and its principal use in medicine.

10. Define the terms Alkaloid and Glucoside. To what class of chemical substances does Tannic Acid belong? By what tests may it be recognized? What is the nature of the change that is apt to occur in Tinctures of drugs containing this substance?

QUESTIONS BY THE EXAMINING COMMITTEE.

1. In what combination is Mercury chiefly found in Nature? State its specific gravity, its freezing and boiling point in Fahrenheit and Centigrade degrees. What is the officinal name of Calomel? State how it is prepared and what impurity it is likely to contain. Name a test for mercuric and mercurous salts in solution.

2. Name N_2O, NO, HNO_3 in the new nomenclature. Describe the physical properties of each of these. State how they may be prepared, and give equations for each, showing the chemical changes by means of Symbols.

3. Give the officinal name, locality and natural order of the plant yielding Seneka. State what part is used, and describe its appearance. Name two of its officinal preparations. Give the name and describe the properties of its active principle.

4. From what crude substance is Phosphorus obtained? Give both processes of the U. S. "Pharmocopœia" for preparing Diluted Phosphoric Acid. What is the specific gravity and saturating power of the diluted Acid? Name an impurity usually contained in Glacial Phosphoric Acid.

5. What is Ergot? Name two of its officinal preparations, and give their composition and dose. What is the therapeutic effect of the drug? How should it be prepared for hypodermic injection?

6 Give the formula for preparing Liquor Plumbi Subacetatis, stating color, taste and specific gravity. What effect is produced by exposure to the atmosphere? Into what officinal preparations does it enter?

7. What is the minimum alkaloidal percentage of the Red and Yellow Peruvian Barks recognized by the U. S. "Pharmacopœia"? Give the officinal and botanical names. What four alkaloids do they contain naturally? How may Salicin and

Hydrochlorate of Cinchonia be detected when used either as substitutes or adulterants of the most important alkaloid in bark?

8. How is Chloroform prepared, and how purified? What is its specific gravity? Give a test for its purity, and its formula in Symbols.

9. Are the following properly constructed prescriptions, therapeutically and pharmaceutically considered? Translate and explain them.

A.

℞—Tincturæ Ferri Chloridi, f ʒ ii.
Syrupi Simplicis, . . f ʒ ii.
Infusi Cinchonæ rubræ, f ℥ v.
Misce.—Fiat mistura de quâ sumatur uncia quartis horis.

B.

℞—Olei Tiglii, . . . n xx
Micae Panis quantum sufficit ut fiat pilula.
Statim sumenda.

C.

℞—Acidi Nitromuriatici.
Tincturæ Humuli
Tincturæ Aurantii *āā*, . f ℥ i.
Infusi Calumbæ, . . ℥ v.
Misce. Fiat mistura Cochlearia duo magna ter in die.

D.

FOR DYSENTERY.

℞—Pulveris Opii.
Pulv. ipecacuanhæ . *āā* gr iii.
Hydrargyri bichloridi gr. vi.
Pulveris Acaciæ
Syrupi ana quantum sufficit.
Misce. Fiat massa in pilulas tres dividenda
Signetur:—One or more to be taken at bed-time.

E.

10. Write a prescription, using metric weights, for 16 pills, each containing about one grain of sulphate of quinia, ¼ grain of extract of nux vomica and 3 grains of extract of gentian.

F.

Is the following prescription correct, and how is it to be dispensed?

℞—Atropiæ, . . . gr. ii.
Aquæ distillatæ, . . f ℥ i.
Signa:—For the *Eye*. One drop to be applied at night.

G.

How is the following formula to be dispensed?

℞—Plumbi Acetatis.
Zinci Sulphatis, . . *āā* ʒ ii.
Misce et divide in xxiv partes aequales.
S.—Use as directed.

H.

Criticise the following prescription:

℞—Acid. Hydroc. dil.
Tinct. Card. Comp., *āā* f ℥ ss.
Aquæ Anisi, . . f ℥ iii.
M. S.—Teaspoonful thrice daily.

The following specimens were upon the table to be examined and named by the candidates, 15 minutes being allowed in each case:

CHEMISTRY.	MATERIA MEDICA.	PHARMACY.	EXAMINING COMMITTEE.
Potassii carbonas.	Serpentaria, mixed with Hydrastis.	Gentianæ pulvis.	Potassii bichromas.
Potass. bitartras.	Gossypii Radic. cortex.	Hydrarg. cum creta.	Sodii sulphas
Sodii bicarbonas.	Buchu.	Tinct. cardamomi cp.	Acidum citricum.
Sodii hyposulphis.	Salvia.	Extract Buchu fluid.	Canella a ba.
Ammonii chloridum.	Cannabis indica.	Syrup. Pruni Virg.	Matricaria.
Liquor calcis.	Sambucus.	Aqua Anisi	.upulina.
Ferri subcarbonas.	Colocynthis.	Aqua Creasoti.	.Iastiche.
Plumbi oxidum	Piper album.	Liquor Ammonii acet.	Aqua destillata.
Acidum aceticum.	Ign tia.	Acidum benzoicum	Mistura Glycyrrh. comp.
Acidum oxalicum.	Guaiaci resina.	Cerat. Plumbi subacet.	Unguentum sulphuris.

A practical examination was held for the first time this year, the candidates being required to compound the following prescriptions and finish them, ready for delivery, within one hour:

1.
℞—Ext. Coloc. Comp. . . . gr. xvi.
Ext. Jalapæ.
Hydrarg. Chlor. Mit. . āā gr xii.
Pulv. Gambogiæ, . . . gr. iii.
M.
Divide in twelve pills.

2.
℞—Ol. Morrhuæ, ... f ℥ ii.
Pulv. Sacch. Alb. . . . . ℥ ii.
Pulv. Acaciæ, ... ʒ iv.
Aquæ Fluvialis q. s. ad . f ℥ iv
Make into an emulsion.

3.
℞—Pulv. Gallæ, ... gr. xx.
Ext. Stramonii, ... gr. xxx.
Adipis Purif. . . . . . ℥ ss.
Make into an ointment.

The following candidates having passed the examination successfully, were recommended for the Degree of Graduate in Pharmacy (Ph.G.) The names are in the order of merit, as ascertained from the examination:

NAME.	STATE.	SUBJECT OF THESIS.
Oleson, Olaf Martin,	Iowa,	*Extractum Colocynthidis Compositum.*
Coxey, Joseph Clarence,	Pennsylvania,	*Jaborandi.*
Kuhn, Norman Archibald,	Ohio,	*Scilla Maritima.*
Rosenwasser, Nathan,	Ohio,	*Colchicum Seed and Colchicin.*
Davis, Theodore Garrison,	New Jersey,	*Chloral Hydrate with Camphor and Resins.*
Bissell, Emery Gilbert,	New York,	*Hops.*
Martin, John Albert,	Pennsylvania,	*The Rhizome of Dracontium Foetidum.*
Drueding, Charles Casper,	Germany,	*Gossypium Radicis Cortex.*
Childs, Walter Foss,	Pennsylvania,	*Polygonum Persicaria.*
Drueding, Henry Gerhard,	Germany,	*Assay of Quinia in Ferri et Quiniæ Citras.*
Beckert, Theodore Frederick,	Pennsylvania,	*Colchicum Root.*
Wilson, Alexander,	Pennsylvania,	*Chemical Change.*
Brennecke, Robert,	Wisconsin,	*Opium.*
Gingrich, John Adams,	Pennsylvania,	*Unguentum Hydrargyri Nitratis.*
Barr, Samuel Earnest,	Ohio,	*Estimation of Morphia in Powdered Opium.*
De Puy, Caspar Edward,	Iowa,	*The Seed of Delphinium Staphisagria.*
Elfreth, Jacob R.,	Pennsylvania,	*Emulsion of Cod Liver Oil.*
Lindewald, Wilhelm Edward,	Sweden,	*The Ammonium Theory.*
Bowman, Charles Alexander,	Tennessee,	*Examination of Commercial Copaiba.*
Koehler, Walter William,	Pennsylvania,	*Pulvis et Unguentum Zinci Oxidi.*
Schools, George William,	Pennsylvania,	*Capsicum.*
Burroughs, Silas Mainevielle,	New York,	*Compression of Medicinal Powders.*
McMullin, Andrew,	Pennsylvania,	*Zinci Oxidum.*
Gates, Burt Pike,	New York,	*Assay of Morphia in Laudanum.*
Crowl, Frank Mercer,	Pennsylvania,	*The Pharmacist.*
Grahame, George Harris,	Pennsylvania,	*Cerates and Ointments.*
Klopp, Eli Leinbach,	Pennsylvania,	*Potassii Iodidi.*
Smith, Joseph Stahle,	Pennsylvania,	*Tinctura Opii.*
Parker, Frederick Henry,	New York,	*Extractum Conii.*
Llewellyn, William Henry,	Pennsylvania,	*Laudanums of Commerce.*
Fulton, Joseph Miller,	Pennsylvania,	*Copaiba.*

NAME.	STATE.	SUBJECT OF THESIS.
ZINN, OSCAR,	Wisconsin,	*The Amount of Quinia in Citrate of Iron and Quinia.*
RYERSON, HENRY OGDEN,	New Jersey,	*Ergota.*
SMITH, JOSEPH GRANVILLE,	Kentucky,	*Hydrargyri Chloridum Corrosivum.*
DEMBINSKI, LOUIS,	Pennsylvania,	*Cantharidin from Doryphora Decemlineata.*
FISHER, HENRY,	Pennsylvania,	*A Test for the Adulterations of Oleum Theobromæ.*
MOORE, RICHARD JESSE,	Ohio,	*Salicylic Acid*
ROE, THOMAS COOMBE,	Delaware,	*Dispensing Prescriptions.*
LATHAM, DANIEL HENRY, JR.,	Pennsylvania,	*Aqua Cinnamomi.*
DRANCOURT, SAMUEL,	France,	*Sugar.*
LAMHOFER, EDWARD,	Nebraska,	*Oleum Theobromæ.*
BUSCH, WILLIAM CHARLES ASMUS,	Iowa,	*Resina Podophylli.*
FUNK, CHRISTIAN LAWSON,	Maryland,	*Home-made Chemicals.*
GRIFFIN, LOUIS FRANKLIN,	Texas,	*The Preparations of Piper Cubeba.*
STROBEL, JOHN, JR.,	Pennsylvania,	*Chemical Affinity.*
MCKEEHAN, GEORGE HENRY,	Pennsylvania,	*Alcohol and its Derivatives.*
BALL, WILLIAM AMOS,	Ohio,	*Chloral.*
ZACHARIAS, ISIDORE,	Georgia,	*The Manufacture of Spirits Turpentine, Rosin and Tar.*
MYERS, EDWIN,	Pennsylvania,	*Arnica.*
UNANGST, EUGENE PETER,	Pennsylvania,	*The Relative Strength of Pepsin.*
WOOLSTON, WM. NORTON SHINN,	New Jersey,	*Erythroxylon Coca.*
GERLING, JOHN MILLER,	Ohio,	*Our Centennial Exhibits.*
EWING, GEORGE WASHINGTON,	Pennsylvania,	*Acorus Calamus.*
BOYER, EDWARD DAYTON,	Pennsylvania,	*Excipients for Pills.*
WEISS, LOUIS,	Colorado,	*A Drug Store in the Far West.*
WALKER, HENRY CRAWFORD,	Delaware,	*Pepsin.*
LUSTIG, EMIL,	Pennsylvania,	*Caloric in Changes of Aggregation.*
KINPORTS, JOHN HENRY,	Pennsylvania,	*Humulus Lupulus.*
APPENZELLER, GUSTAVE ADOLPH,	Pennsylvania,	*Extract. Glycyrrhizæ Depuratum.*
WRIGHT, G. SHOEMAKER ROBERTS,	Pennsylvania,	*Gossypium.*
WILLIAMS, THOMAS DAVID,	Pennsylvania,	*The Tincture and Ammoniated Tincture of Guaiac.*
EVANS, ESTELL,	Pennsylvania,	*Copaiba.*
HARRIS, WILLIAM,	Pennsylvania,	*Pepsin.*
LYNEMAN, FELIX ANTHONY,	Virginia,	*Tinctura Capsici.*
ROSS, DAVID WILLIAM,	Pennsylvania,	*Garrya Fremonti.*
KRAMER, HOWARD SAMUEL,	Pennsylvania,	*Unguentæ.*
SCHEEHLE, GEORGE PHILLIP,	West Virginia,	*Extract of Hyoscyamus as found in the Shops.*
LEVERING, GEORGE WASHINGTON,	Pennsylvania,	*Chloral Hydrate.*
LEWIS, WILLIAM THOMPSON,	New Jersey,	*Protochloride of Iron.*
MCMULLIN, ALBERT,	Pennsylvania,	*Compressed Camphor.*
MARTIN, GEORGE, JR.,	Pennsylvania,	*Potassium Hypophosphites.*
MAULICK, WILLIAM FREDERICK,	Pennsylvania,	*The Vicissitudes of the Graduate.*
DAVIDSON, ABRAHAM,	Germany,	*Radix Valerianæ.*
LANDSCHUTZ, PETER,	Pennsylvania,	*Resina Jalapæ.*
CHRISTMAN, HARRY WARREN,	Pennsylvania,	*Prinos Verticillatus.*
GOESS, GEORGE CONRAD, JR.,	Pennsylvania,	*Elegant Pharmacy.*
TRUPP, LOUIS,	Pennsylvania,	*Fluid Extract of Prunus Virginiana.*
PHILLIPS, JACOB FRANKLIN,	Pennsylvania,	*Nitrous Oxide.*

NAME.	STATE.	SUBJECT OF THESIS.
Dickeson, William Eunice,	Pennsylvania,	*Lignin and Cellulose.*
Schwartz, Arthur,	Russia,	*Water.*
Smith, Albert Henry,	Pennsylvania,	*The Indigenous Plants.*
Stevenson, Richard Graham,	New Jersey,	*Production of Coloring Matter from Coal and its Products.*
Moore, Frank,	Maryland,	*Althæa Officinalis.*
Byerly, Charles Henry,	Pennsylvania,	*The Action of Mild Chloride of Mercury on Comp. Tincture of Iodine.*
Cloud, Harlan,	Pennsylvania,	*Duty and Responsibility of a Pharmaceutist.*
Terrill, George Morton,	Virginia,	*Forms in which Medicines are Used.*

Examined in June, 1876.

Harris, Park,	Pennsylvania,	*Opium.*
Lins, Frank Pierce,	Pennsylvania,	*Jaborandi.*

The following gentlemen had passed the examination entitling them to the Certificate of Proficiency in Chemistry and Materia Medica :

Lehman, John Wesley,	Pennsylvania,	*The Use of Glycerin in Fluid Extracts.*
Witsil George Edward,	Pennsylvania,	*Honey and Glucose.*

The commencement exercises were held on the evening of March 16 at the Academy of Music, the first Vice-President, Charles Bullock, conferring the degrees, in the absence of the President. The senior professor presented the Procter prize to Olaf Martin Oleson, for having passed a very satisfactory examination in each branch, and the best general examination, as well as presented a meritorious thesis. Professor Remington then read the names of the first course students who had successfully passed the junior examination in February, and Professor Bridges delivered the valedictory address, after the close of which Mr. E. F. Boyer, of the graduating class, on behalf of himself and fellow-students, presented to him a valuable gold watch and a handsome album, containing the photographs of all the members of this class. Prof. Bridges, who had been completely taken by surprise, responded in a happy manner, referring to the growth of the college since the time when, nearly a half century ago, he became the assistant of the late Prof. Bache, then holding the chair of chemistry, and whom he followed in the year 1842.

The distribution of the usual quota of flowers, and other substantial presents, closed the exercises, which were interspersed with music by the Germania Orchestra.

Alumni Association of the Philadelphia College of Pharmacy.—The Thirteenth Annual Meeting was held on the afternoon of March 15, the President, George W. Kennedy occupied the chair; Mr. Wallace Procter, Secretary.

After the reading and approval of the minutes, the annual report of the President was read. It stated that in reviewing the past year they have every reason to be encouraged. The scientific meetings, during the winter months, for the benefit of the students, were well attended and had been interesting and profitable. During

the year a number of their associates were removed by death. The laboratory has been well patronized, all the tables having been occupied.

The Treasurer reported a balance of $71.77.

The Committee on Nomination of Officers presented the following report, and, on motion, the Secretary cast the vote of the Associotion for the names therein contained: President, R. V. Mattison; Vice-Presidents, S. M. McCollin, H. E. Wendel; Treasurer, E. C. Jones; Recording Secretary, Wallace Procter; Corresponding Secretary, W. W. Moorhead; Executive Committee, G. W. Kennedy and H. Trimble; Trustee of Sinking Fund, T. S. Wiegand.

The meeting then adjourned.

In the evening a public reception was given to the graduating class and their lady friends at College Hall. The Alumni address was delivered by Thomas S. Wiegand, Ph.G., and the following Alumni prizes were distributed:

A gold medal, for the highest average at the recent examination, to Olaf Martin Oleson, Iowa, and Certificates to Joseph Clarence Coxey, of Pennsylvania, for proficiency in Chemistry; Walter F. Childs, Pennsylvania, for Materia Medica; Norman A. Kuhn, Ohio, for Pharmacy, and to Richard Jesse Moore, Ohio, for proficiency in Pharmaceutical Manipulation.

A certificate for the highest average in the junior examination was awarded to David Patrick Miller, of Virginia.

The thirteenth annual report of this association will soon be published; copies of it will be mailed on application to the Recording Secretary.

New York College of Pharmacy.—The forty-seventh commencement was held at Chickering Hall, March 20, when the degree of Graduate in Pharmacy was conferred upon the following candidates:

Avery, Abbott L, New Jersey, *Salicin and Salicylic Acid.*
Benham, Edward N., New Jersey, *Sulphur, Sulphurets, and Sulphuric and Sulphurous Acids.*
Boeddiker, Otto, New York, *Picrotoxin.*
Boyken, J. Anton, New York, *Citric Acid.*
Bradley, Simeon C., New York, *Ergota.*
Breitenbach, Max J., Georgia, *Gossypium Herbaceum and Products.*
Broquet, Edward, Iowa, *Opium.*
Colby, Willis D., Ohio, *Modern Methods of Concealing the Taste and Odor of Medicines.*
Corwin, Fred. M., New York, *The Action of Certain Processes and Officinal Preparations on Calomel*
Doepfner, Eugene, New York, *Guarana.*
Duteil, Victor, Province of Quebec, *Nicotiana Tabacum.*
Egge, Karl J., New York, *Iodide of Potassium.*
Fries, Peter, New York, *Pharmaceutical Zoology.*
Frost, William A, New Brunswick, *Carbolic Acid.*
Garrison, Frank, New Jersey, *Arsenic and its Officinal Preparations.*
Getty, Wilmot S., North Carolina, *Phosphorus and Acidum Phosphoricum Dilutum.*
Goetze, Julius, New York, *Combustion and Flame.*
Hebig, William, New York, *Emplastrum Plumbi.*
Heidt, Thomas P., Georgia, *Classification of the Articles embraced in a Course of Lectures on Materia Medica.*

Henry, Ferris W., New York, *Iron and its Officinal Preparations.*
Herdling, Victor, New York, *The Gum Resins.*
Howe, Charles L., Vermont, *Weight, Measure and Specific Gravity.*
Hund, Otto H., New York, *Volatile Oils.*
Hunt, Effingham L., New Jersey, *Copper and Some of its Salts.*
Iler, Robert L., Louisiana, *The Reactions of Uric Acid.*
Kingston, Robert J., New York, *Opium.*
Klippert, Chas. F., New York, *The Origin of Caoutchouc and its Uses.*
Kopf, Henry, New York, *Boron, Boracic Acid and their Compounds.*
Lawler, Charles J., New York, *The Isolation of the Blue Coloring Constituent of Litmus.*
Leister, Ernest F., New York, *Saponification and Soap.*
Levy, Adolph, New York, *Copper and its Preparations.*
Montanus, Ernest, Jr., North Carolina, *Zinc and its Officinal Preparations.*
Neubauer, William G., New York, *Balsamum Tolutanum, History, Impurities, Tests.*
Nowill, F. Herbert, New York, *Cream of Tartar.*
Parker, John H., Connecticut, *Honey.*
Pauly, Christian N., New Jersey, *Careful Dispensing.*
Rieger, Hugo, New York, *The New Theory of Chemistry.*
Rose, J. Thurston, New Jersey, *Coffee.*
Routh, Jason P., Province of Quebec, *Berberina.*
Schmid, Henry, New York, *Arsenic.*
Schoelles, William, New York, *Sulphuric Acid, its Preparation, Properties and Uses, Tests, etc., etc.*
Schoenchen, George T., New York, *Ipecacuanha and its Preparations.*
Schoenefeld, Conrad, New York, *Nitrite of Amyl.*
Schrader. Hermann, Pennsylvania. *Phosphorus.*
Speck, Oscar O., New York, *Iodine.*
Stahl, Edward A., Jr., New Jersey, *Atropa Belladonna.*
Stegmair, Julius A., New York, *Salicylic Acid and the Salicylates.*
Teschner, Jacob, New York, *Iron and its Preparations.*
Van der Emde, Henry, New York, *Zinc and its Medicinal Preparations.*
Van Duzer, William A., New York, *What is the Most Precious and Valuable Metal?*
Wells, Francis B., Massachusetts, *The Preparation of Chemically Pure Urea.*
Winkelmann, John G., New York, *Sulphur.*
Zoeller, Edward V., North Carolina, *The Volumetric Method of Atropia.*

The gold, silver and bronze medals of the Alumni Association were awarded respectively to F. B. Wells, E. Montanus, Jr., and E. V. Zoeller. The graduating class presented to the College the photograph, in crayon, of Professor Bedford, who delivered the valedictory address on behalf of the faculty, M. Breitenbach responding for the graduating class.

Pharmaceutical Society of Great Britain.—At the Pharmaceutical meeting held February 7th, President John Williams in the chair, numerous donations to the library and museum were made; among the latter was a sample of *aconite root,* from Japan, which recently appeared in the London market and is now being investigated with the view of ascertaining whether it contains the same aconitia as Aconitum napellus, in which case it would form a valuable and salable article. It is very superior in appearance, soundness and freedom from admixture to that imported from Germany.

Mr. Postans remarked that *sublimed chrysophanic acid* had a very different appear-

ance to that prepared by crystallization from benzol. Professor Attfield said that during sublimation a portion of the acid was usually decomposed, the amount depending on the quantity operated upon and upon the length of time during which it had to be exposed to a high temperature. He did not think that there was any alteration in the sublimed portion.

Professor Bentley read a paper *on the admixture of white hellebore with valerian root*, and pointed out the principal differences which are readily observed. These are: 1. The leaves of the conical bud of veratrum or their fibrous remains form concentric sheaths arranged one within the other, while the leaves found at the end of the creeping shoots of valerian are opposite and overlap at the base; but such stolons are rarely if ever present in commercial valerian. 2. The white hellebore rhizomes are much larger, of a darker color and marked below with the pits and scars of old roots. 3. A transverse section of white hellebore rhizome presents a large central woody or spongy portion, of a whitish or pale-buff color, which is separated by a fine wavy-crenate ring from an outer broad white part, which is coated by a thin dark-brown or blackish bark-like portion. Commercial valerian shows a dark-brown firm and horny central portion, separated by a dark interrupted cambial zone from the brown cortical part. A vertical section of veratrum rhizome presents a fine dark wavy conically arranged line running nearly throughout its entire length. 4. The roots of veratrum arise from the upper part of the rhizome only, are larger, more shrivelled and of a paler color than those of the valerian rhizome. 5. The taste of veratrum rhizome and roots is at first sweet, then bitter, acrid and somewhat numbing. Valerian has no acridity, but is aromatic and somewhat bitter. 6. After admixture with valerian, veratrum acquires a feeble odor of the former; when cut or bruised, it excites sneezing. 7. Strong sulphuric acid, applied to a transverse or vertical section of the two rhizomes, produces with veratrum a deep orange-yellowish-red color, soon changing to dark blood-red, while the natural color of valerian is simply heightened.

From 42 ounces of the article the author picked out 8 ounces of white veratrum. The admixture was afterwards stated to have occurred at the docks by the breaking of two bales and the careless gathering of the scattered contents. But the author rather inclines to attribute it to carelessness in collection, and urges the necessity of an examination by a competent person, appointed for that purpose, of imported drugs, more especially when these are plants or parts of plants; also the necessity of carefully examining the drugs in our home stores and pharmacies.

In the discussion which followed the reading of the paper, it was stated that drugs which came from the continent, especially from Germany, contained a larger proportion of admixture than any others; also that at the present day American valerian root fetched a higher price than any other. The importance of microscopical examination was likewise dwelt upon.

Mr. H. Senier read a paper *on the coloring matter of the petals of Rosa Gallica*. Quercitrin and fat was first removed by ether, the coloring matter exhausted by alcohol, precipitated in a green, amorphous state by acetate of lead, and the precipitate decomposed either by sulphuretted hydrogen or an insufficiency of sulphuric acid. Well-defined microscopic crystals were obtained on combining the coloring matter with alkalies, the ammonio-potassium salt crystallizing in octahedra. Alkalies

change the color to a deep red with a bright green fluorescence, and when added in excess, to yellow; chlorine changes the color to yellow; sulphuretted hydrogen, to brown; stannic chloride, to a beautiful dark magenta; boiling with metallic mercury, to dark violet or purple. The hydrates of barium and of calcium yield yellowish green precipitates, changing to brown on drying. The lead precipitate has a composition corresponding to the formula $Pb_2C_{21}H_{29}O_{30}$.

Mr. W. A. Shenstone read a paper on *the action of dilute nitric acid on brucia*, referring to the observations of Sonnenschein ("Amer. Jour. Phar.," 1875, p. 345) and Cownley (*ibid.*, 1876, p. 354), and confirming the results of the latter, that thereby brucia is not converted into strychnia; on the contrary, the latter is destroyed by the action of the nitric acid, the more rapidly the stronger the acid has been. The finding of strychnia is attributed to the presence in commercial brucia of some strychnia, the author separating from one sample rather more than 1 per cent. For the complete separation the author recommends a process which depends upon the fact that strychnia precipitates brucia from its salts; the solution of the brucia salt is partially precipitated by an alkali; after standing aside for a few hours the precipitate is collected, washed, redissolved in dilute acid, and the partial precipitation repeated two or three times; the alkaloid in the mother-liquor may be recovered.

Mr. B. H. Paul read a paper *on the "Pharmacopœia" test of quinia sulphate*, which requires the absence of any separation of alkaloid crystals on the addition of ammonia to 10 grains of quinia sulphate and half a fluidounce of ether. The author found the presence of 30 per cent of cinchonidia sulphate could not be detected in this way, and recommends Kerner's test for this purpose ("Amer. Jour. Phar,," 1862, p. 426; 1875, p. 537). The German "Pharmacopœia," in which the test has been adopted, recommends to macerate two grams of the salt in 20 cc. of distilled water, at 15° C., filtering after half an hour, introducing 5 cc. of the filtrate into a test-tube, pouring cautiously upon the liquid 7 cc. of officinal ammonia water (sp. gr ·960), and then mixing gently, when immediately, or after a short time, a clear liquid should be formed. The author recommends a modification of these directions by boiling 30 grains of the salt with 1½ fluidounces of water, allowing to cool, filtering, etc.

Pharmaceutical Society of Paris.—At the meeting held Nov. 8th, a note by Mr. Bretet was read, concerning *the adulteration of wines with sulphate of iron.* From his observations the author concludes, 1st, that the addition of sulphate of iron to wine deprives that liquid of a portion of its tannin, tannate of iron being precipitated while the sulphuric acid remains in the wine, either free or as an acid salt; 2d, the nature of the wine is thereby completely altered; 3d, to prove the fraud, it is not sufficient to test the suspected wine with ferrocyanide of potassium, but it should be compared with a wine of undoubted origin, and, if possible, some of the deposit in the cask should be procured, in which a large proportion of iron will be found.

The presentation by Mr. Latour of a deposit from the staves of a cask in which wine colored with fuchsin had been kept, led to some discussion, and to the appointment of a committee to report on the artificial coloration of wine with fuchsin.

Mr. Yvon exhibited a portable *uroscope*, consisting of a metallic tube containing the necessary test-tubes, litmus paper, globules of caustic potassa and a little microscope, to determine the reaction of the urine, the presence of albumen (by heat) and sugar (by potassa), and to examine with the lens any urinary sediment, etc.

At the meeting held Dec. 8th, the bequest of the late Mr. Gobley, amounting to 3,000 francs, was paid in. Mr. Méhu was elected Vice-President, and Mr. Petit, Secretary, for the ensuing year. Mr. Poggiale communicated a paper recently published by Prof. Kolbe, of Leipzig, in which he takes strong ground against the tendency of chemistry as at present taught in Germany, which he characterizes as neglecting the profound study of phenomena by exact experimental researches, and substituting in place thereof vague philosophical speculations and unproductive theorems, and predicts that, unless the course be changed, some years hence it would again become necessary for German students in chemistry to repair to Paris, because natural philosophy rather than chemistry would then be taught in Germany. On the contrary, in France, many young chemists have in recent years been educated, who, with the older ones—with few exceptions—remain true to the exact sciences, and produce numerous memoirs based upon inter sting researches.

At the meeting of Jan. 8th, Mr. Planchon exhibited a Chinese bark called *hoang nau*, which is said to be used in hydrophobia and leprosy; its physical resemblance to false angustura bark (Strychnos nux vomica), and its bitter taste suggests that it may probably be derived from a strychnaceous plant.

Mr. Benoit, in a note *on the testing of chlorate of potassium*, proposes the use of a ferrous salt for this purpose, which in the presence of strong hydrochloric acid will be converted into a ferric compound.

Mr. Limousin read a note *on Croton oil pencils*, which he prepares by melting one part each of white wax and cacao butter, by means of a water-bath, in a glass flask, adding two parts of croton oil, and corking the flask until the mixture begins to congeal, when it is poured into suitable cylindrical moulds, 8 to 9 millimeters in diameter. The pencils are covered with tinfoil and kept in closed vessels. It is claimed for the pencils that the action of the oil can be better localized, and that its revulsive action is even more energetic than when applied in its natural state.

EDITORIAL DEPARTMENT.

The Journal.—Through the kindness of our friends for some months past, an amount of original matter had been contributed for publication in the JOURNAL, that much of the selected matter had to be laid aside. For the present issue it was determined to use at least a portion of the material which has been accumulating on our table, and to accomplish this, it became necessary to increase this number to 64 pages. Amongst the original matter contributed to this issue will be found accounts of plants and their constituents which are successfully used in medicine, or promise to become valuable medicinal agents, or have been employed more extensively heretofore. Several papers on pharmacopœial preparations and on general

topics will be read with profit and interest, and the gleanings and selections from foreign and domestic journals cover a wide range of observation and research.

Fluid Weights in Prescriptions.—Mr. Alfred B. Taylor, has written, under this title, a very valuable paper, which is published in the "Medical and Surgical Reporter," Feb. 24. A point which has been often overlooked, is discussed by noting "that whether the ultimate system of conversion comprise the substitution of weights for volumes, or of one order of weights for another order, no necessity exists (excepting for purposes of rigid comparison) for preserving exact translations or precise equivalents of proportion. It is quite sufficient that good approximations to established values be attained. Physiologically and therapeutically there can be no very accurate determination of the mathematical value of an average effective dose of any agent; and no reason can be assigned for regarding one grain of opium (for example) as a medium sedative dose, rather than $\frac{11}{12}$ of a grain, except its convenience, by our existing notation. This consideration is calculated to prevent a large amount of superfluous labor and anxiety likely to be bestowed by some on very minute determinations of metrical equivalents."

It may be most convenient for physicians who are accustomed to prescribe by measure to follow the suggestion of Mr. Taylor, by prescribing all medicinally active preparations by weight, and ordering the addition of an adjuvant to a determinate fluid volume. In former papers we have shown that in most countries it is the universal custom to prescribe and dispense by weight *only*, and we do not believe that there the patients had just cause for complaint about inaccuracies. In reality, the trouble of fixing the dose of mixtures is by no means as great as is often imagined, as we endeavored to show before; still as a compromise for those who cannot altogether abandon old habits, the plan is a good one, but we should like to see it coupled with the efforts of educating the medical student and young practitioner into the habit of abandoning measures altogether in his prescriptions, as was formerly also the practice in Great Britain.

The suggestion of Mr. Taylor to abandon in medicine the term cubic centimeter for flui-gram would prove of considerable convenience if measures were perpetuated in prescribing and dispensing, which, we think, will not be the case. Regarding the approximate measurement of doses, Mr. Taylor suggests the following:

In order, however, to remedy the very irregularity which now exists from the uncertain capacity of the common teaspoon, it would be very desirable that a medicinal spoon of uniform and standard capacity should be authoritatively and generally adopted. Were the "Metric" weights established, spoons accurately made to hold exactly four flui-grams might very properly be called "metri-spoons," and would prove a great convenience both to the physician and to his patient. They should be manufactured both in glass and metal; and for facility of movement without spilling, as well as for greater accuracy in filling, the bowls of such medicinal spoons should be deeper and more spheroidal than those in common use.

For larger doses than the teaspoonful but a single additional measure would be required to complete the domestic equipment, a substitute for the very uncertain two-ounce "wine-glass." A glass vessel somewhat of the form of the apothecaries' two-ounce graduate, accurately marked to show the capacity of 17.324 fluid drachms, might be called a "metri-glass." Its capacity would be in excess of the double fluid ounce by f ʒ1⅓; and if graduated to eighths, its lowest division would represent the double "metri-spoon." This useful vessel, would, therefore, comprise the equivalents of the double teaspoon or dessert-spoon, the tablespoon, the double tablespoon, and the wine-glass.

These two terms, "metri-spoon," and "metri-glass," would, from the nature of the case, soom come to signify the abstract measure, as well as the concrete implement; rendering the use of the suffix "ful"

superfluous. The direction, "a metri-spoon three times a day," would thus naturally supersede the expression, "a metri-spoonful." Were the gram and centigram authoritively adopted, the employment of these weights (after having been translated by suitable tables) would be found to be much less troublesome than might be supposed. With a little practice, the use would, of course, soon become as convenient as that of our own weights at present.

The tenor of Mr. Taylor's paper is well shown in his concluding remarks, where he says:

To recapitulate—the purpose attempted in this paper has been to point out, first, that fluid medicines may be as easily prescribed and dispensed by weights as by volumes, after a proper tabulation of effective and maximum doses of the entire materia medica in units of weight; secondly, that mixtures so prepared may be administered with perfect facility by familiar measures of volume; thirdly, that in the event of the officinal adoption of the "metric" gram, its notation can be made exceedingly simple and convenient; fourthly, that in this case, while no serious disadvantage would result from the retention of the familiar fluid drachm, or teaspoonful, yet, for the sake of greater precision and neatness, the "flui-gram" (the French millilitre) should be the popular unit of volume for the actual administration of fluid medicines; and lastly, that, for the sake of certainty and uniformity, the "teaspoon should be replaced by a standard medicinal spoon, holding just four "flui-grams," and the ordinary, but variable, "wine-glass" should, in like manner, be superseded by a "metri-glass" having the capacity of sixteen such standard medicinal spoons.

These suggested reforms would none of them be found to be very difficult of introduction, and they would result in the advantage to the profession of a great permanent convenience, facility and trustworthiness in the employment and exhibition of therapeutic agents.

Responsibility of Pharmacists in Cases of Criminal Poisoning.—A case was tried in the Court of Oyer and Terminer, in this city, on March 19th, which is of considerable interest and general importance. It appears that on November 13th, Wm. H. Driscall purchased four ounces of tincture of opium at a well-known drug store, and on arriving home, in the presence of his mother and sister, swallowed about three ounces of it in two draughts; he vomited some, and although medical aid was soon after obtained, he died in about seven hours. The assistant who sold the laudanum was tried under the charge of manslaughter.

It was testified by two relatives and two neighbors that the deceased was drunk before the purchase; he had been seen in the street somewhat staggering and had been dozy at home. On the other hand a witness for the prosecution testified that at the store he had the appearance of a sober and respectable man, and conversed rationally about the election and the weather. It was also proven that when asked why he wanted so large a quantity, he said it was for family use, and he did not want to be running out after it every day; that the deceased had been a customer at the store before, and that the clerk, because it was said to be for family use, and to guard against mistakes by the family, had put a prominent poison label upon the bottle in addition to the regular label, which, besides the name of the article was marked "poison" and had full directions for use.

The case was submitted without argument upon the charge of the Court. Judge Peirce charged the jury that it was averred on the part of the Commonwealth and conceded by the defence that if the defendant knew that deceased was drunk or intoxicated when he sold him the drug, defendant would be liable, under this indictment, to conviction. He agreed therewith, and it was for the jury to determine whether the defendant had such a knowledge; but if they were satisfied defendant only sold the drug to deceased after a conversation with him and a careful inquiry

as to the use to be made of the drug, and his sobriety, and that defendant was satisfied that he was sober, and it was right and proper that he should have the drug, then defendant had committed no offence, and the verdict should be not guilty.

After a few minutes' deliberation, the jury returned a verdict of "not guilty."

Substitutions.—The formula for an effervescent laxative draught, furnished by Mr. Jos Rhinehart, for the March number, is there stated to yield a cheaper, equally efficient, quite pleasant and more expediously made preparation than citrate of magnesium, and as such, deserves the attention of physicians and pharmacists, to be prescribed by the former for poor patients, or furnished by the latter when a pleasant dose of "epsom salt" is desired, particularly since it may be prepared in a minute or two. No one, however, should find in it a recommendation to put up such an article, label it "citrate of magnesium," and sell it as such; such a course would be outright fraud.

We are prompted to these remarks by having received two communications, recommending to prepare *citrate* of magnesium, by lessening the officinal quantity of citric acid and making up the deficiency in activity by the addition of more or less magnesium *sulphate*. We have reason to believe that such a reprehensible practice exists to some extent; in extenuation, it may, perhaps, be said, that such private formulas date back to the time before the present "Pharmacopœia" was published, when the then officinal formula did not yield a permanent preparation. But since we have an officinal formula yielding a preparation which leaves little or nothing to desire, there can be but one of two motives found for persisting in such a course, either the desire for greater gain, or the wish to undersell a conscientious neighbor.

If such a preparation was sold, not under the officinal name, but designated so as to indicate its composition, no fault could be found. But the worst feature of the practice is that it is "home adulteration," and if allowable in apparently unimportant matters, where is its limit? The pharmacist guilty of it creates at least a suspicion as to his honesty in other important matters.

The Pharmaceutical Examining Board has made the following report for the year 1876:

To the Hon. William S. Stokley, Mayor of Philadelphia:

The "Pharmaceutical Examining Board" respectfully report that during the year 1876 they received applications from forty clerks for examination and registration as "qualified assistants." Of this number twenty-three were rejected as not posessing the requisite knowledge and qualifications to take charge of a retail drug store during the temporary absence of the proprietor. Seventeen were deemed safe for the position, and were registered accordingly, and received their certificates, making them legally "qualified assistants."

Eleven applications for examination were made by persons wishing to open stores as proprietors thereof, four of whom did not appear when notified to do so. Of the seven examined, four were found so deficient in the knowledge of chemistry, materia medica, pharmacy, and doses of active remedies that the Board was unwilling to assume the responsibility of granting them certificates. Three persons passed the examination satisfactorily and were registered as "Proprietors."

During the year ten graduates of Pharmacy entering into business were registered according to law without examination by the Board. The total number on the register on December 31st, 1876, was five hundred and ninety (590) proprietors, and three hundred and twenty-five (325) qualified assistants.

It is believed that many retail drug stores have been opened in the city by persons who evade the law requiring them to be registered, the one where a fatal mistake[1] occurred recently being a melancholy

[1] This case was reported in our last number, page 141.—EDITOR AM. JOUR. PHAR.

instance. The Examining Board is powerless to prevent such violation, but if your Honor will allow your patrolmen to return the names of the owners of all stores opened upon their beats, with their locations, you will render important assistance in carrying out the law, which was passed for the protection of the lives of the citizens, and in accordance with which we hold our appointments by you.

It appears from this that nearly sixty per cent. of the applications from both clerks and intended proprietors had to be rejected as unqualified. The Mayor has acted in accordance with the suggestion of the Examining Board, and a number of stores were found, the proprietors of which had omitted to become registered. From the above figures the number of apothecary stores in the city of Philadelphia cannot fall much short of 550, which, for a population of 850,000, averages 1 for every 1,600 inhabitants.

Prices of Pills.—In Mr. Moore's paper on pills, in our last number (page 123), a few quotations from the price list of a manufacturer of compressed pills have been given. One of the manufacturing houses of this kind of pills has sent us a printed price list, showing that their list prices are considerably below those referred to above. They quote compound cathartic pills, 40 cts.; 1 gr. quinia sulphate, $1.25; Lady Webster's, 40 cts., and compound rhubarb pills at 70 cents per hundred.

Pharmacy Law of New Jersey.—The Legislature of New Jersey, at its recent session, passed "an act to regulate the practice of pharmacy," which is now awaiting the signature of the Governor. It provides that the New Jersey Pharmaceutical Association shall every three years submit to the Governor the names of 15 pharmacists doing business in the State, out of which number he is to appoint five as the Board of Pharmacy of the State of New Jersey. Every pharmacist now engaged in business in the State is entitled to registration on payment of two dollars; all others, except graduates from pharmaceutical and medical institutions, will have to pass an examination before the Board, and will then be entitled to registration on payment of five dollars. The exception alluded to is so ambiguously worded, that the graduates referred to do not appear to come under any of the provisions of the act.

It is curious to note the fact that eight or nine years ago a pharmacy law was prepared by a physician, then a member of the Legislature of New Jersey, which contained the provision that no graduate in medicine should be permitted to enter into the pharmaceutical business until after he should have been actively engaged behind the prescription counter *for at least one year.* He was evidently aware of what many physicians are too shortsighted to acknowledge, that there is a vast difference between the knowledge of the therapeutical application of drugs and a thorough pharmaceutical training or education. What a difference between that proposition and the provision in this law! The law is good in that it creates the title of "registered pharmacist," the unlawful use of which is liable to a penalty of $50. It has several weak points, and the machinery necessary to carry it out appears to be rather awkward, but may perhaps work more smoothly in practice. On the whole, however, we congratulate our brethren in New Jersey at their success after the years of labor, which really deserved to be rewarded with one of the best laws yet enacted.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Qualitative Chemical Analysis. A guide in the practical study of chemistry and in the work of analysis. By Silas H. Douglas, Professor of Chemical Technology and Metallurgy, and Albert B. Prescott, Professor of Organic Chemistry and Pharmacy in the University of Michigan. Second edition, revised. New York: D. Van Nostrand, 1876. 8vo, pp. 254.

Although the work is intended for the more advanced student, who has already studied chemistry theoretically, the preliminary chapters contain brief explanations concerning chemical notation and the various operations performed in analytical work. This is followed by the analytical reactions of the metals, divided as usual into groups, and of the inorganic and of the commoner organic acids. The reactions given are not merely those which are necessary for the performance of ordinary qualitative analysis, but it has been the authors' aim to give as complete a picture of the behavior of the various substances as the present state of science will permit, for the purpose of making it available for recognition and separation under the most varied circumstances. The tables of comparison, which are introduced to take a bird's-eye view of the resemblance and differences of the behavior of allied metals and acids, will be found very convenient and instructive. The book closes with chapters on analysis in the dry way, on the systematic analysis of solutions and the solubilities of salts, and with an enumeration of the reagents used in analysis.

The authors say that the chief object in this work has been "to aid the student in gaining an accurate acquaintance with the facts whereby analyses are made, and a clear understanding of the co-ordination of these facts—the principles of analysis."

In our opinion, the work is well calculated for this purpose, and it cannot fail, when properly used, "to prevent habits of automatic operation and of superficial knowledge in analysis." We recommend it to pharmacists and others as a work of reference in the performance of analytical work.

The United States Pharmacopœia and the American Medical Association. 8vo, pp. 11.

This pamphlet, by Prof. H. C. Wood of the University of Pennsylvania, opposes the position in regard to the national "Pharmacopœia," as taken by Dr. Squibb in the pamphlet noticed on page 143 of our last number, and, like the latter, merits the careful attention of all the medical and pharmaceutical bodies of the United States.

The People vs. Schrumpf. Misdemeanor: Adulteration of Milk. Argument of W. P. Prentice, counsel to the Board of Health for the prosecution. New York: 1877. 8vo, pp. 32.

A few months ago this case attracted considerable attention, and was freely discussed by the daily papers. The pamphlet before us is an able review of the testimony on both sides, and more particularly of that portion which relates to the detection of watered milk by means of the lactometer, which Prof. Doremus had asserted was unreliable. The accused was found guilty.

Report on the Salt Manufacture of Michigan. Prepared to accompany volume III of the State Geological Survey. By S. S. Garrigues, Ph D., State Salt Inspector. New York: Julius Bien, 1876 pp. 52.

An interesting report on the manufacture of salt, entering into details concerning apparatus, process, inspection and yield, and giving also historical notes and statistical information.

Considerations in Relation to Diseases of the Joints. By David Prince, M.D. pp. 33. Reprinted from the "American Practitioner," February, 1877.

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THE PHARMACOPŒIA of the UNITED STATES and the AMERICAN MEDICAL ASSOCIATION.

By Alfred B. Taylor.

(*Read at a special meeting of the Philadelphia College of Pharmacy, held April* 9, 1877.)

The approach of the usual time for the decennial revision of the "United States Pharmacopœia," calls for an early consideration from all practically interested in this important work, of any suggestions which may be presented, having in view improvements in its matter or its method.

A project contemplating very radical changes in the conduct of this revision has recently been promulgated and advocated with great ability and earnestness by Dr. E. R. Squibb, of Brooklyn, and has already been presented with characteristic energy to the American Medical Association in June last, to the American Pharmaceutical Association in September last, to the King's County Medical Society of New York in October last, and to the New York College of Pharmacy in December last. Collected and published in a pamphlet form, the position and arguments advanced by Dr. Squibb have been widely disseminated through the medical and pharmaceutical professions, and will doubtless receive the attention due to the importance of the subject discussed.

The project referred to comprises two entirely distinct and independent topics, although they have constantly been treated by their author as the mere details of a single system. The first topic is a proposal to abolish the function and jurisdiction of the well-known and long established "National Convention for revising the U. S. Pharmacopœia," by a formal resolution of the American Medical Association that it "does now and hereby assume the ownership of the 'Pharmacopœia of the United States of America,' and as the superior repre-

sentative body of the organized medical profession does now and hereby relieve the 'National Convention for Revising the Pharmacopœia' from any farther acts of ownership, control or management of the Pharmacopœia." (p. 31 of pamphlet.) The second topic broached is the advocacy of certain changes in the plan of the work and in the frequency of its publication; (pp. 43, 44.) changes which, if shown to be really desirable improvements, have evidently no relation whatever to their parentage, and may as readily and effectually be accomplished by the present organization as by its hypothetical successor.

The first project certainly presents a somewhat startling character, and it is difficult to seize fully the argument by which it is attempted to be justified. The general proposition appears to be that the National Convention, though sufficiently well adapted for the purpose of its creation some sixty years ago, by reason of the special ability of the few men who continuously executed the prescribed task of revision, yet as these few eminent men have passed from their field of action, the National Convention has practically outlived its usefulness, and may now as well be decently buried. If it be true that the vitality of an organization is thus to be assimilated to the longevity of an individual, what better guarantee has the American Medical Association to offer that its usefulness could outlive the alloted term of three-score years. For "if by reason of strength they be *four-score* years, yet is their strength labor and sorrow; for it is soon cut off, and we fly away."

"It will be noticed," says the author, "that this decennial Convention *for this express purpose* long antedates this Association, and it is probable that if this Association had been in existence in 1820, or any similar National Association, it would have had charge of the Pharmacopœia." (p. 4.) Possibly so. What then? If this Association had preceded the decennial Convention, "it is probable" it would have rendered it superfluous; *therefore*, not having preceded, it should now supersede the Convention! "As it stands now, this Asscciation is very nearly a duplicate of the Pharmacopœia Convention; so nearly so that one or the other seems unnecessary." If this striking similarity really exists, it does not appear doubtful which of the two should, and which of the two must, "its quietus make," and gracefully or otherwise retire from the field. If "this Association is so nearly a duplicate of the Pharmacopœia Convention," which was long before organized "for this

express purpose," so much the worse for the "duplicate;" for upon it lies exclusively the onerous task of establishing its *raison d'être*. Never has it been heard of that the occupant by primogeniture need be called on to produce his title-deeds, or to abdicate at the invitation of the younger "duplicate;" and it is not probable that the considerate mass of either the medical or the pharmaceutical professions will "willingly let die" the older occupant of the field, placed there "for this express purpose" of revision, and successful (Dr. Squibb himself being the judge) in having "worked well for more than fifty years;" (p. 4.) having exercised "the powerful influence of work well done." (p. 32.)

Perhaps a plea might be put it for the continued existence of the American Medical Association, that in conception and creation, in objects and in career, it was by no means so "nearly a duplicate" of the National Convention as had been represented; that its membership was determined by a certain respectability of standing among therapeutists, without any reference to fitness, real or supposed, for critically determining the best forms of the *Materia Medica* and its pharmaceutical preparations. And our author has told us that even a selected council of physicians, "fitted without special training to take up such a work and do it moderately well at once, certainly could not be found!" (p. 14.) On the other hand, the decennial National Convention, selected from representatives of the medical and pharmaceutical professions throughout the country, supposed to be best qualified for this especial work, convened "for this express purpose," and distracted by no other objects or discussions, would seem at first sight to occupy a domain very far removed from any chance of rivalry, or any suspicion of encroachment on even the youngest of annual fellowships and professional associations.

It will be observed that the resolution above cited "assumes ownership of the Pharmacopœia" for the American Medical Association by a *coup d'état*, "as the superior representative body of the organized medical profession." This is certainly a curious ground on which to base such an "assumption," admitting the modest claim to be well founded. But "superior representative body" in what respect? "For this express purpose?" Never can such a proposition be for a moment admitted!

"That the plan of revising the Pharmacopœia by this Convention has been eminently successful and sufficient up to 1850 or 1860 will not

be doubted by any reasonable person, for the testimony of the great mass of the profession will be heartily, promptly and thankfully accorded to this proposition." (p. 33.) But the objection is raised that the existing Convention "has not been so successful in the later revisions, and notably defective in the last one, when the committee of final revision and publication refused to carry out the instructions of the Convention, and substituted its own judgment in opposition to that of the authority by which the committee was created." (p. 5.) It is presumed that this somewhat severe condemnation (which, after all, certainly cannot fall upon the *Convention*) refers to the failure of the executive committee to substitute measures of *weight* in all formulas of liquid preparations, for measures of *capacity*, as directed by the sixth resolution of general instructions. Now it must be said in extenuation of this dereliction, that the proposed change was admittedly a very radical one; that probably very few of the members of the Convention who voted for the change fully realized the amount of labor and responsibility involved in the reconstruction of formulas on the basis of weight alone, in deciding on just ratios, in many cases by new and original determinations of specific gravity, and in probably modifying more or less every tincture, solution and mixture of the Pharmacopœia, and that this additional labor would probably have entailed another year of delay in the completion of the work. This fault of omission on the part of the committee, at the worst but a conservative retardation of the car of progress, leaving the Pharmacopœia no less useful than in its previous revisions, certainly forms no very cogent reason for impugning or invading the legitimate jurisdiction of the Convention.

But it is further objected (and this in an argument before the last meeting of the American Pharmaceutical Association) that the last revision of the Pharmacopœia "does not represent the progress in pharmacy up to the time;" "that its descriptions and details are insufficient;" "that its processes are many of them unnecessary"—some "defective, while a few are positively bad;" and "that there are more errors in it" than there should be. (pp. 10, 11.) Vague as are these allegations, they may be met with a simple and direct traverse. It may be confidently affirmed that in relative excellence, in fullness, and in general accuracy, the last edition of the Pharmacopœia compares favorably with its predecessors, upon which Dr. Squibb has expended his contrasted praise that "the work was so admirably done."

And the decision of the issue may be left to the intelligent pharmacist. Perhaps very few of the criticisms since offered to the last revision were not freely and fully canvassed in the committee.

In the address before the New York College of Pharmacy we find the somewhat milder statement, "The true reason why our last revision was so unsuccessful, and probably the only reason why we are now left to desire a change, if we do desire one, is because it is so constructed as to require a Dispensatory, and is now without one." (p. 19.) This appears to be a totally new objection. Certainly a "Dispensatory" is no part of a "Pharmacopœia," and as certainly it was no part of the duty of the Convention, or of its executive Committee, to prepare a "Dispensatory." The cause of the unfortunate delay in issuing the expected revision of the latter work, it is well known, is the infirm condition of its venerable surviving editor and proprietor.

Our critic proceeds: "The reason why we have not a better Pharmacopœia now, is that the labor involved was so great that no man or set of men should have been asked to perform it unpaid. The Committee did not only all that could be reasonably expected of them, but far more than they could afford to do. . . . Let us not permit ourselves to complain that the work was not better done, but let us be thankful that it was done so well." (p. 19.)

An objection more directly addressed to the decennial Convention is the somewhat curious one that this body is not properly a "national" one. "Whatever may have been the reasons, this organization *never was a national one*, in any true sense of the word, in its relation to the aggregate medical profession of the United States, and its Conventions were not only infrequent, but small, and simply gave support and authority to a very few men." (p. 6.) Now, what are the simple facts as to the constituency of this organization? The fundamental rule of its existence is—

"The President of this Convention shall, on the first day of May, 1879, issue a notice requesting the several incorporated State *Medical Societies*, the incorporated *Medical Colleges*, the incorporated *Colleges of Physicians and Surgeons*, and the incorporated *Colleges of Pharmacy*, *throughout the United States*, to elect a number of delegates not exceed-three, to attend a General Convention to be held in Washington on the first Wednesday in May, 1880."

Here are four most important classes of Associations "throughout

the United States" specifically invited to send delegates to this general Convention, and yet it is not *national!* What, then, is to make it "national"? A penal enactment in Congress that every specified association in every State *shall* send delegates? Let us hear Dr. Squibb's own statement. "The fact that in this organization the *medical* profession of eight to twelve States only was represented, was not the fault of the organization, for each decennial Convention not only invited delegates from all the States, but urged upon State Societies, Colleges, etc., the importance of being represented in and aiding in a work of such importance." (p. 6.) So, according to our author, something more than the right to send delegates, or the formal request, or the urgent solicitation to send delegates, is requisite to confer a general or national character upon the Convention. By this postulate, the attempted secession of the Southern States, some sixteen years ago, left us without a "National" Congress! even though it might be charitably conceded that the default of the absenting representatives "was not the fault" of the faithful Congress. If the Medical section of the constituency of the Convention neglected in many of the States to present an appearance in response to the urgent invitation of the Convention, this apparent apathy "was not the fault of the organization;" and if it *may* have been, as suggested by Dr. Squibb, "perhaps more than all, because the aggregate profession had full confidence in the few men who managed the interest so well, and trusted them fully, basing this trust justly upon the beneficent results of their labors;" (p. 6.) possibly it was quite as much because the aggregate profession felt but little special interest in the object of the Convention, and but little disposition to engage in a laborious and somewhat thankless undertaking.

As a contrasted picture to this local and sectional Convention, let us contemplate what is characterized as "a truly national organization" in the American Medical Association. "From 1848 to the present time this Association has consisted of representatives from so *nearly* all the States that it must be fairly considered a national organization." (p. 6.) Could not some of this "*truly* national" flavor be generously imparted to the now limited and provincial Convention? "It would be quite competent for this Association, at its meeting for 1879, to *direct* one of its constituent members from each State Medical Society to attend this 'Convention for Revising the Pharmacopœia' in 1880, and thus give to the organization that nationality of character which it

now needs." (p. 7.) There we have the true secret of a "national character!" Instead of invitation and earnest appeal for three delegates from every incorporated institution of medicine and pharmacy "throughout the United States," let the Convention in the future "direct" one member from each State to attend, and it will then have attained (what it now needs) "a truly national character!" It is true that the Medical Association represents but *one* of the four classes represented in the Convention, but "this is of no consequence!" Surely, never was there a stranger fabrication of a premiss to serve a theory than in this "distinction."

Now let us learn its purpose. "If it does represent the aggregate medical profession, it is fairly entitled to the management and control of all the general interests of that profession. . . . Among the most important of these . . . is that of the Pharmacopœia; and this interest has, up to this time, been left entirely under the control of the older and smaller national organization." (p. 6.) Surely, never was there a stranger *non-sequitur* fabricated from such a premiss.

It has not been pretended that the American Medical Association was called into existence with any reference whatever to "this express purpose," or that its members have been delegated, in any sense, as special experts in chemistry or in pharmacy, or in technical knowledge of the materia medica. Indeed, it may be said that the contrary is tacitly admitted throughout the argument. "Now, the American Medical Association, as a large, unwieldy, migratory body, must manage such an interest as this by some fixed and permanent body organized for the purpose within the Association." (p. 24.) Hence, "the plan which is to be submitted to the American Medical Association, at its meeting in June next, is that it shall organize a Pharmacopœial Council, to be incorporated if necessary, consisting of five members, which council shall be charged with *the entire management* of the Pharmacopœia and all that pertains to it, and be responsible only to the American Medical Association. This council I would propose to form as follows: The nominating committee of the Association to nominate and the Association to elect the president of the council; then the association to *invite* (not "direct") the Surgeon-Generals of the Army and Navy each to appoint one member, and *invite* the American Pharmaceutical Association to appoint two members." (p. 25.) Now for the *modus operandi.* "As the meetings of this council would

have to be frequent during the general revisions, and perhaps two or three times a year for the supplementary fasciculi, and as the members would have to educate themselves to the special work, it would, perhaps, be better that the council should be small and compact, and live in adjacent cities." (p. 9.) As three of the council are to constitute a *quorum*, (p. 54.) who may "obtain a change in any of its members," we should probably have, as the final outcome of the so much vaunted "nationality" of the enterprise, a Pharmacopœia under the entire control of *three representatives of the United States*, (small and compact) "living in immediately adjacent cities!" And this is gravely proposed as an eminently "national" improvement on the existing *local* plan of an executive Committee of *fifteen*, representing *nine* leading cities, from Boston to Richmond, and from New York to San Francisco, together with a representative of the Army and of the Navy of the United States.

There is in the proposal, on behalf of the youthful Association, to quietly "assume the ownership" of the special and peculiar property of an old-established and entirely independent organization, an element of the ludicrous, which we think that Dr. Squibb himself could not fail to appreciate, were he to change his subjective for an objective stand-point. Perhaps the nearest typical analogue of the proposition is to be found in Mr. Dickens' veracious history of a somewhat similar *appropriation* by Mr. John Dawkins (otherwise known as "The Artful Dodger") of a silver snuff-box; he having first unanimously adopted the mental "resolution," that he "does now and hereby relieve the late proprietor from any farther acts of ownership, control, or management of the aforesaid silver snuff-box."

Let us suppose, then, that the American Pharmaceutical Association, at its forthcoming meeting, should adopt the following preamble and resolutions:

WHEREAS, The American Pharmaceutical Association, as being the only organized body which represents the profession of Pharmacy in the United States of America, may fairly claim the right to control all the general rights and interests of the profession; and

WHEREAS, "The Pharmacopœia of the United States of America," is among the most important of such general rights and interests; and

WHEREAS, A national Pharmacopœia is in no proper sense a Manual of Therapeutics, but is, and should ever continue to be, "an authorized dictionary of the standard materia medica;" and

WHEREAS, A national Pharmacopœia "is the result of accumulated experience and scientific research as directed to remedial agents, and especially aims to establish a standard for quality, strength and uniformity in the materia medica; and in accomplishing this it also becomes of necessity an authorized formulary for compounding the substances of the materia medica, or converting them into such preparations as come into general use under specific names," etc.; therefore be it

Resolved, That the American Pharmaceutical Association does now and hereby assume the ownership of the "Pharmacopœia of the United States of America." And as the superior representative body of the organized profession of Pharmacy, does now and hereby relieve the "National Convention for Revising the Pharmacopœia" from any farther acts of ownership, control or management of the Pharmacopœia.

If this resolution should strike the author of its original, as being somewhat presumptuous, to the present writer it really appears much less so than the one it parodies.

The fundamental fallacy of the repeated declaration "that the American Medical Association as the only concrete body or organization which fairly represents the *whole medical* profession of the United States, and therefore as really owning the United States Pharmacopœia as one of its most important general interests, should now take possession of the Pharmacopœia and control it henceforth," (p. 13.) lies in the equivocal use of the word "medical." The postulate is approximately true, only on the narrow and technical implication that the "medical profession" is equivalent to the art of *applied* medicine, in other words, to "therapeutics;" and in this sense the sequence becomes (be it said with all respect) ridiculously inadequate. On any broad and philosophical significance of the phrase as embracing the abstract science of medicine or "pharmacology," the declaration is self-evidently erroneous. For any purpose of giving plausibility to the *quod erat desideratum*, for any purpose of giving equitable color of jurisdiction to a *pharmacopœia*, it is very far from correct to affirm or to assume that the American *Medical* Association "fairly represents the *whole* medical profession!" So far the contrary, that most important part of it, specially devoted to the study and preparation of "medicines," is in that body entirely unrepresented. And yet our author has himself admitted "that pharmacy is *as much a part of medicine* as surgery," (p. 22)—very much more; for surgery is not in strictness an application of "medicine."

"The Pharmacopœia, then, is a general interest of medicine. . . . Now, if one of the general interests of medicine, who has a right to

its control? The *united* interests of medicine, and not the interests of any separate part." (p. 22.) The writer says very correctly, that "Pharmacy is but a specialty of medicine." (p. 22.) In stating and insisting on this fact, however, he seems not to have recognized "its other side," that medical practice has also, by the very same operation, become *specialized.* The physician is no longer a druggist as he once was; and this diffierentiation but illustrates the universal law of growth and development. When, therefore, Dr. Squibb reiterates "the *united* interests of the united parts is found in this country in the American Medical Association, and nowhere else," (p. 22.) he mistakes utterly. The interests of medicine are found in this country just as much in the American Pharmaceutical Association. The "*united* interests" are obviously found in neither representative body separately. When he adds, "By right, every pharmacist should be a member of the medical profession by education, and should then be a member of the American Medical Association, for there is where he belongs, to practice one of its specialties," (p. 22.) he evidently fails to realize that general law of organic evolution, that specializations, when once established, may either survive and grow, or may decline by atrophy; but that they never *merge.* He argues as though the therapeutist, after successive "specializations," still retained the original "comprehensive type." When he says that "wherever the organization is found which embraces the *general* interests of medicine, it is there that the Pharmacopœia should go, for it is there that it belongs," (p. 22.) he has established very clearly that at least it cannot properly go to the American Medical Association, even if that body possessed the moral and legal authority to "appropriate" it.

Referring to the profession of pharmacy, he says, "It happens that, from being the first and oldest specialty which grew out of medicine, it has erected itself into a special art or profession, and shows a tendency to claim independence of the medical profession, and a co-equality. To appreciate how unreasonable such a claim would be, if ever seriously made by pharmacy, it is only necessary to remember that medicine, in order to do without pharmacy as a profession, has only to compound and dispense its own remedies to its own patients." (p. 49.) Here again we have the latent impression that the physician still retains his ancient "comprehensive type;" that he has only temporarily (as it were) laid aside the gathering of simples, and may at any

time resume it. The writer still fails to realize that the "medicine" is necessarily as old as the "medicine-man;" and when, in the progress of civilization (which is evolution), the two became detached—lo, there were *two* medicine-men: the one resigning his visitations of the sick, that he might give a more efficient and undivided attention to the preparation and dispensation of remedies; and the other resigning his labors over drugs that he might give the fuller and more observant attention to the sick. And here, as everywhere, "specialization of function" has resulted in a wonderful advancement and perfection of the function on either side. Now it is just as nonsensical to talk of the pharmacist resuming his ancient care of the sick as to talk of the really skillful and intelligent physician returning "to compound and dispense his own remedies to his own patients!" But it is not a whit *more* nonsensical so to talk.

"How shall the art of pharmacy ever become either co-equal with, or independent of, the art of medicine? If not co-equal with, it must be either superior or subordinate to the medical art; and subordinate it certainly is, and this with a dangerous tendency to the *mercantile* bias." (p. 49.) Such is our author's way of not "trying to draw a dividing line" between "medicine and pharmacy," which he has just before declared to be "irrational"! (p. 48). Such is the "*imaginary* antagonism which has been too much cultivated!" (p. 7.) What ground has Dr. Squibb for imagining that, by the existing method of selecting expert pharmacists as delegates to the Convention, there is the *probability* of infusing a "mercantile bias"? What suspicion has ever been breathed that the labors of the pharmacist in the past, whether in Convention or in Committee, have ever tinged or tainted the Pharmacopœia with a "mercantile bias"? What purpose of division and antagonism is to be served by the suggestion of "a *dangerous* tendency to the mercantile bias" in the future? The imputation is as wholly unjust and unwarranted, as it is ungenerous and insulting.

The existing decennial Convention is neither a Medical nor a Pharmaceutical Society. It is a very special body of men, selected deliberately from chartered Colleges of either profession, convened on a platform of individual equality, for the exclusive work of revising the Pharmacopœia. For fifty years has this Convention performed its allotted duty, and performed it well. How well is evinced by the

reluctant admissions of the talented Adversary of the Convention. During this time no occasion or suspicion of any rivalry between the two leading professions represented has occurred to mar its equanimity or to distract its efforts. Nor has the pharmacist, although most directly interested in the result of its action, and most completely involved in the details of its execution, ever felt aggrieved that he has been outnumbered in the Convention by double the medical representation; or ever desired a change in the constitution or the method of the organization.

It is now proposed to abolish this Convention, and to transfer its great work entirely to the keeping of a Medical Association. The projector has not, however, been guilty of the stupendous absurdity of devising a production of the Pharmacopœia with Pharmacy entirely "left out;" for, he says, "it would be almost as impracticable to manage the interests involved in the Pharmacopœia without the co-operation of pharmacy, as for pharmacy to manage them without medicine; simply because pharmacy has accumulated an amount of knowledge and experience, which medicine has long ceased to work for and accumulate, and which medicine cannot afford to do without or to disregard." (p. 8.) A very sufficient statement that "medicine" (in Dr. Squibb's use of the word) does not comprehend "pharmacy," and, therefore, does *not* comprise "the united interests of the united parts, found in this country in the American Medical Association," as he has so fondly persuaded himself, and has so ingeniously labored to make us believe.

How, then, is this grand embodiment of "the *united* interests of 'medicine,' and not the interests of any separate part; the united interests of the *united* parts in this country," (p. 22.) to execute its magnificent programme? "Pharmacy is represented in the National Pharmaceutical Association . . . and pharmacy is essential to the Pharmacopœia!!" (p. 8.) Therefore, it is proposed that the American Medical Association "should, in a proper way, *invite* the co-operation of the American Pharmaceutical Association in this work, *under the fully recognized leadership* of the American Medical Association!" We are not sure that there is not a typographical error in this quotation, and that the word "invite" should not be "direct," especially as we find this latter word employed on the preceding page in a somewhat similar connection.

A very slight modification of the above process might (with all diffidence) be suggested, which would seem to give a congruity of purpose, a unity of plan, and a solidarity of result, eminently fitting and equitable. Remembering that "pharmacy is but a specialty of medicine," "but a subordinate *part* of the medical art;" and remembering further that "by right every pharmacist *should be* a member of the medical profession by education, and *should* then be a member of the American Medical Association," (p. 22.) and, whereas, there should be no invidious distinction made between the several parts of the "united interests of medicine" in this country, or between the decennial Pharmacopœia Convention on the one hand, and the annual Association of Pharmacists on the other, in our treatment of the same, therefore, let it be "resolved," that the American Medical Association, as the superior representative body of the organized medical profession, does now and hereby relieve the American Pharmaceutical Association from any further acts of control or management of affairs connected with the improvement of the art and science of pharmacy, and does now and hereby "assume" the entire ownership and control of all the properties, rights, duties and proceedings whatsoever of the said Association. For "it will hardly be doubted that this Association, as the only national representative of the profession," "is fairly entitled to the management and control of all the general interests of that profession, and the only proper source of authoritative action." As pharmacy is evidently one of the most important interests of the medical profession, "it would be quite competent for this Association," at its next meeting, to accomplish this desirable end and thus give to pharmacy a "truly national" character! The absorption of virtue, by this proceeding, would, doubtless, fully equal the "assumption" of responsibility thus "resolutely" effected. For there is much virtue in good "resolutions."

The writer appears to realize that this Association is not entirely adapted to the peculiar business in which he would have it engage; (p. 24.) and that even a select council, to whom it should wholly commit the subject, could not be expected to "do it moderately well without special training." (p. 14.) Nevertheless, having wrenched the spoil from a Convention of "specialized function," for the honor and aggrandizement of the "superior" Association, he would have the latter "control and manage the Pharmacopœia by means of a

council, to be styled the Pharmacopœial Council of the American Medical Association." This council of five to "be charged with the entire control and management of the Pharmacopœia in all its details." (p. 13.) The American Pharmaceutical Association being "invited" to select and appoint two pharmacists to serve on the council, the ingenious author of the scheme acknowledges that "it seems a little doubtful, however, whether the Association will accept such an invitation if tendered;" (p. 52.) and he expresses an artless "surprise" that several prominent members should have been so "unreasonable" as to object to so advantageous an arrangement. (p. 53.)

Is it seriously supposed that a *co-ordinate* national Association could, with self-respect, *accept* an "invitation" to assist, "under the fully recognized *leadership* of the American Medical Association," in eking out the lack of special skill and training of a body which had unwarrantably "assumed" a task for which that body was utterly unqualified? "The professions of medicine and pharmacy are inseparable in a pharmacopœia; and it seems irrational to try to draw a dividing line." (p. 48.) And who has been prominently engaged in this "irrational" attempt, if not the man who has undertaken to *wrest* a great work from an "inseparable" organization of the pharmacist and physician, to place it under the entire control and "fully recognized leadership" of the medical profession?

Our revolutionist very properly deprecates all attempts at encouraging a jealous feeling between the physician and the pharmacist. "Medicine and pharmacy," he says, "without their natural connection and dependence upon each other, would soon lose their utility to mankind. . . . And an imaginary antagonism between them, which has been too much cultivated of late on both parts, is exercising a degenerating effect on both." (p. 7.) And yet the whole fabric of reconstruction, so laboriously devised, is based on an unconscious sentiment of rivalry between the two professions.

It needs no argument to show that for an efficient revision of the Pharmacopœia there is required the co-operation of at least four classes of specially trained experts; first, one or more *medical* experts, to bring a large experience and knowledge to bear on the therapeutic value of proposed additions to, or withdrawals from, the Materia Medica; second and third, one or more *botanical* experts, and one or

more *chemical* experts, to bring an enlightened judgment to bear as to the characteristics and tests of standard excellence in the organic, and in the inorganic departments of the Materia Medica ; and fourth, one or more *pharmacal* experts to consider well the preparations and processes to be adopted in the Pharmacopœia. No subsidiary employment of special technical experts (" under direction of the council " p. 53) can possibly supplement a lack of these powers and capacities in the executive Commission itself, however desirable such employment of additional skill may be in assisting such powers and capacities. No single man or *class* of men can possibly embody, in sufficient degree, this necessary range of culture and attainment.

And yet our enterprising innovator is so bent on having the coveted work *medically* done (well, if possible, but if ill, still medically done,) that anticipating a failure to secure the co-operation—we mean sub-operation—of " pharmacy," he has made full provision for " running the machine "—" in case the American Pharmaceutical Association should decline this invitation ;" (p. 41.) as it is " necessary to provide in the organization of the council, against *any* miscarriage of the work." (p. 53.)

Were, then, the previous declarations that " a pharmacopœia without pharmacy would be a theory without practice ;" (p. 7.) " that it would be *almost* as impracticable to manage the interests involved in the Pharmacopœia without the co-operation of pharmacy, as for pharmacy to manage them without medicine ;" (p. 8.) and " that the pharmacists and physicians should *unite* in making the Pharmacopœia ;" (p. 22.) were these declarations intended to be taken in a " Pickwickian " sense ? And is the plan matured that in case the American Pharmaceutical Association should be innocent enough to accept an invitation " under the fully recognized leadership " of the superior representative body, the pharmacists shall ultimately be " invited " *out* by the competent and plenary authority which invited them in, when the proper time shall have arrived, and the new departure may be considered to have been fully established ?

" Medicine and pharmacy, without their natural connection and dependence upon *each other*, would soon lose their utility to mankind !" (p. 7.) " Pharmacy is one of the specialties of medicine, and bears a *closer* relation to general medicine than any other specialty ;" (p. 49.)

not even excepting the specialty of practical therapeutics, or the healing art itself.

"How, now, can medicine do without pharmacy? The answer here seems equally plain, that it could not do without it at all, and that it would be very unwise to attempt it, unless pharmacy, acting as a separate profession, should force the irrational and unnatural discord." (p. 49.) But Pharmacy unquestionably *is* "a separate profession," in the same sense, and to the full extent that Therapeutics or "Medicine" is a separate profession. The answer *here* "seems equally plain:" pharmacy could not well do without "medicine," and it would be very unwise to attempt it, *unless* medicine, "acting as a separate profession, should force the irrational and unnatural discord!"

Our author has deliberately published his "proposed plan for the future management of the U. S. Pharmacopœia, to be submitted to the American Medical Association at its Annual Meeting in Chicago in June, 1877." (p. 30.) If the military aptness displayed by the contemplated procedure of confiscation is striking, still more remarkable if possible is the stratagetic combination suggested to get rid of the superfluous incumbent, the surviving organization thus sought to be despoiled. "That can be easily done, for the American Medical Association can say next year, if it chooses, to those bodies which are at present represented in the Association, and were represented in the last decennial Convention, that the Association has decided to take possession of the Pharmacopœia, and asks such bodies *if* it be in their judgment a proper move to make, to send delegates with authority to transfer allegiance from the National Convention to that Association. Then, if complied with, the matter is plain, for the American Medical Association can pass a *resolution*, asking that the President of the National Convention shall not call the Convention in 1880!" (p. 23.)

The general method, if ingenious, is not entirely unprecedented; for (if Dr. Squibb will pardon the metaphor) this is not the first time that an assassination has been contrived to wear the guise of a suicide. Two subjects of surprise, however, are occasioned by this passage; the first is the "assumption" of authority over the constituent bodies represented in the Association; (though we do miss the word "direct,") and the second is the further "assumption" that these constituent bodies can control the Convention. In Dr. H. C. Wood's excellent pamphlet, in reply to Dr. Squibb, it is stated that "out of the thirty-

one organized bodies represented in the National Pharmacopœial Convention of 1870, but six or seven are entitled to send delegates to the American Medical Association, and *no college* is permitted representation in the Association." (p. 8.) That is to say, under a Napoleonic generalship, three State Medical Societies and three local Medical Societies (supposing them to be obedient to the behests of the American Medical Association,) are "assumed" to overwhelm and rout twenty-two other incorporated bodies represented in the National Convention, and not represented in the Medical Association![1]

As certainly as any human events can be foreseen, the National Convention for revising the United States Pharmacopœia will hold its usual decennial meeting "in Washington, on the first Wednesday in May, 1880." And as certainly it will proceed as usual to the deliberate discharge of its appropriate duties; adopting its well-considered policy, and giving to the medicinal professions of the country in due time its expected edition of the United States Pharmacopœia.

Re-iterating the cherished fallacy that the American Medical Association, "as the *superior* body, and even embracing the *very elements* of the National Convention [!] may relieve it and assume its functions and work," the writer, under review, proceeds to the logical result, that this Association "may even carry these out in its own way, yet the officers of the Convention may decline to be relieved, and may call a Convention in 1880, as provided for by the Convention of 1870. There might then be two Pharmacopœias." (p. 35.)

Should the ill-advised counsels of Dr. Squibb find any sufficient following to re-enact the farce of 1830, when New York ventured the experiment of a rival Pharmacopœia, the event will be deplored by the judicious, but it will not effect the credit or the success of the only duly authorized occupant of the field.

As if in anticipation of such a programme, the author ventures to announce the following opinion: "If the American Medical Association took the title from the Convention, and produced its book first, then the pharmacists would be obliged to call their book by some other

[1] This does not include, on either side, the representation of the following three bodies: the Medical Departments of the "U. S. Army," and of the "U. S. Navy," and the "Medico Chirurgical Society of Louisville," which three bodies, although represented in the last National Convention, were not represented in the American Medical Association at that time.

name!" (p. 27.) In this very remarkable announcement, the aspiring opponent of the Convention has evidently not taken the precaution to secure the advice of Legal Counsel.

While we believe that the existing method of constituting the Convention could not well be improved, we are inclined to the opinion that an authority given by the National Government to a standard of so much importance as the U. S. Pharmacopœia, would be very desirable. Fully recognizing both the difficulty and the impolicy of any penal enforcement of such a standard in a country where, as Dr. Squibb has stated it, "every man has a right to have his disease treated as he pleases," we do not think it necessarily follows that, "hence we cannot hope to have a governmental pharmacopœia in any true sense of the term." (p. 23.) Were the call of the Convention to emanate, by law, from a Secretary of one of the Departments—the Interior, the War, or the Navy,—with such extension of the constituency as might be thought proper, there can be no doubt that such official invitations to co-operation would be much more generally responded to, and that the resulting work of the Convention would have the prestige of a governmental sanction and authority; at least to the extent of preventing the professional scandal of a rival Pharmacopœia, such as we are just now so causelessly threatened with.

The discussion of the primary portion of my subject has extended so far beyond my expectations and desire, that I am compelled reluctantly to defer the second branch, namely: proposed changes in the Pharmacopœia and its Plan, to another occasion.

WEIGHTS AND MEASURES.

By Edward Gaillard, Ph.G.

(*Read at the Pharmaceutical Meeting April 17th*, 1877.)

It is stated in the "Home Cyclopedia of the World's Progress," that weights and measures were invented by Phidion of Argos, 869 B. C.

They became general in most countries soon afterwards. Standards of weights and measures were provided for the whole kingdom by the Sheriffs of London, 8 Richard I, A. D. 1197. Standards were again fixed in England in 1257. They were equalized for the United Kingdom in 1825, and no doubt extended over her colonies by early settlers.

The metric system that is engrossing the mind of the pharmaceutical world here, was first adopted in France, and is now slowly superseding the systems in use in other countries. It was authorized to be used in the United States, and its use introduced into some departments of public service, in 1866, by act of Congress. The two most important points of this system are: 1st, that it is a decimal system, and, 2d, that the units of length, superfices, solidity and weight are all correlated, two data only being used, the meter and the weight of a cube of water, the side of which is the hundredth part of a meter. The system was suggested as long ago as 1528, by Jean Fernal, a physician of Henry II of France; took a practical turn in 1790, and in 1803 a work on Pharmacy was published in the French language by Lagrange, giving formulas with the two systems, for example:

Wine of Opium.

℞.	Aqueous extract opium,	32	grams	(1 ounce
	Saffron,	16	"	(½ "
	Cinnamon,	8	"	(℥ii
	Cloves,	4	"	(℥i
	White wine,	½	kilogram	(1 pound
	Mix.			

A committee of the Academy of Sciences had been appointed, and the result of their labors was a close approximation to the true length, and in the highest degree creditable to the scientific men engaged in it. By means of the arc of the meridian measured by Bougier and La Condamine, in Peru, 1736, the length of the quarter of the meridian, or the distance from the pole to the equator, was calculated. This length was partitioned into ten millions of equal parts, and one of these parts was taken for the unit of length, and called a meter, from the Greek word signifying measure.

Two important principles form the basis of the metric system: 1st, that the unit of linear measure applied to matter in its three forms of extension, viz., length, breadth and thickness, should be the standard of all measures of length, surface and solidity; 2d, that the cubic contents of the linear measure in distilled water, at a temperature of great contraction, should furnish at once the standard weight and measure of capacity. Thus, 1st, the unit of length was the meter, as we have seen—the 10,000,000th part of a qaudrant of the earth's surface. From this we derive, 2d, the unit superfices, the arc—a square decimeter; 3d, the unit of capacity, the liter—a cubic decimeter; 4th,

the unit of weight, the gram—the weight of a cubic centimeter of water.

These four units are subdivided into tenth, hundredth and thousandth parts, which are denominated by the syllables derived from the Latin, deci, centi and milli; the muliples are similarly by tens, hundreds, thousands and ten thousands, distinguished by the prefixes borrowed from the Greek, of deca, hecta, kilo and myria.

The whole of the multiples and subdivisions of the metric system are decimal, and the reduction from one denomination to the other is performed by multiplying by ten or its multiples, or dividing by them. There is no necessity to alter the figures, but merely to read them differently, by placing the decimal point so many places, according to the terms of the required denomination.

No system of metrology hitherto invented can be compared with this of the French in a scientific point of view, while its convenience for the purposes of commerce or pharmacy is now so generally admitted by those who have made themselves intimately acquainted with its workings, that the universal adoption to pharmacy cannot be much longer delayed.

INDEXING OF PERIODICALS.

By Hans M. Wilder.

Mr. Moore's article on the *external* treatment of books suggests to me that a few words concerning their *internal* treatment might not be amiss.

When, in the course of our readings, we come across a statement which may be of use to us, or, for one reason or other, interests us, we "make a note of it" (so to speak) in our mind. This will do for awhile, particularly respecting books, etc., in our possession, which we can consult at any time. We soon find out, however, that our memory is quite unreliable, particularly in regard to figures; for this reason, and because we read many books and periodicals which we seldom or never have occasion to consult again, we keep a memorandum book in which we jot down the chief points, figures, etc., not forgetting reference to book, volume and page. Provided we keep pace with the progress of our profession, it will not take a long time before said memorandum book swells to, it may be, a hundred pages or more, and we find it necessary to make an alphabetical register to facilitate the find-

ing, all of which work has to be repeated at no distant time again. Now all this is irksome, and for those who read (and note down) I offer the following suggestion:

This is nothing else than the "card" system of the large libraries.

Cut somewhat stiffish paper (which can bear a good deal of handling without getting creases) into convenient size (say 3 inches by 5). Now write each statement or fact you wish to recollect on a separate "card," heading it with a catch-word in larger, heavier letters. Note down only the indispensable points, figures and absolutely necessary details, trusting your memory with the rest; do not forget to add due reference; you might, perhaps, wish at some future time to consult the printed article. Arrange all your cards in strictly alphabetical order, and add any additional card at once in its place. You have now an always indexed suit of memoranda which can be consulted in a moment. Keep the cards in a card press; by screwing tight down no card will get lost.

This arrangement is also the preliminary step to making an index to books and periodicals, and also for cataloguing a library, the amount of "noting" necessary varying, of course, with the object in view.

Speaking of periodicals: The "American Journal of Pharmacy" can boast of having the most complete and best-arranged general index of any periodical (whether scientific or semi-scientific) in the world; the one that comes nearest to it in completeness, but ill-arranged, is the one to the "Journal de Chimie et de Pharmacie."

Those desirous of knowing what a card catalogue looks like, may see one at the old Philadelphia Library (South Fifth), which is for the use of any visitor; all larger libraries have one, of course.

ELIXIR GLYCYRRHIZÆ.

By Geo. W. Kennedy, Ph.G.

An elixir by the above name has been introduced in our section within the last few weeks, intended as an adjuvant to disguise and cover the extremely bitter taste of the cinchona alkaloids, epsom salt and other nauseating and bitter medicines. I can say, after a large number of experiments, that this elixir will admirably answer the purpose for which it is recommended and intended. Experiments made with the view to ascertain and determine the quantity of quinia an ounce of

the elixir will completely disguise, prove that the bitterness of from 10 to 12 grains is masked, while with from 15 to 20 grains there is but a slight bitterness observed, comparatively speaking. Hitherto the great objection to quinia as a medicine, especially when given in a liquid form, has been its very bitter taste. There are few sick or convalescent patients who can take it in solution; besides it is frequently prescribed for young children, and to prepare it for those in as palatable a condition as possible is the great object of elixir glycyrrhizæ, which I hope will fill a vacant place in the line of the many elegant pharmaceutical preparations, and one which I am satisfied, from my own observations, will meet the hearty approval of the medical fraternity.

The elixir taraxaci comp. of Mr. P. C. Candidus, a formula for which preparation was presented to the American Pharmaceutical Association, 1869, is also intended to mask the bitterness of quinia, and will be found to contain, as one of the ingredients, liquorice root; there is no doubt but this root is the one which has the effect of concealing the bitter taste of many nauseating medicines. The main objection, I find, to Mr. Candidus' preparation is, that in a short time it becomes turbid and presents an unsightly appearance, whilst thus far the elixir of liquorice root has remained perfectly clear, and seems, therefore, preferable as an adjuvant.

Regarding the mode of action of liquorice root in disguising the taste of bitter medicines better than other sweet principles, I would refer the reader to an article by Mr. Joseph M. Hirsh, published in this journal in 1871, p. 77, and copied from the "Proc. Am. Phar. Asso.," 1870, wherein he says, "When glycyrrhizin or liquorice dissolves upon the tongue, the latter soon becomes furred, coated; this coat being a coagulum of the albumen of the saliva with the glycyrrhizin. A few tests convinced me that even a weak solution of albumen coagulates readily with glycyrrhizin, and I took the artificial coating of the nerves produced by the albuminous coagulum of glycyrrhizin to be the true cause of its masking bitterness." And in order to prove this assertion, other drugs which also coagulate albumen, for example carbolic acid, were experimented with, and found to have a similar effect.

My object here is to bring this subject again before the medical and pharmaceutical professions and recommend its use, and also to furnish a formula for a preparation which is much pleasanter than simple syrup and to the former decidedly palatable.

The following formula I find to furnish an excellent elixir.

℞.	Radic. glycyrrhizæ opt.,	℥ii
	Spir. vini rect. fort.,	f℥vi
	Aquæ,	f℥vi
	Syr. simplic,	f℥iv
	Spir. aurantii,	fʒiss
	Spir. cinnamomi,	♏viii

The spirits are made by dissolving 1 fluidounce of the oil in 15 fluidounces of stronger alcohol.

Make a moderately coarse powder of the root, mix the alcohol and water, moisten the powder with the mixture, allow it to stand twelve hours, pack in a conical percolator, and pour on the balance of alcoholic mixture and sufficient diluted alcohol until 12 fluidounces of percolate are obtained, then add the syrup and finally the spirits of orange and cinnamon.

Pottsville, Pa., April, 1877.

AROMATIC ELIXIR OF LICORICE.

By Joseph P. Remington, Ph.G.

Read at the Pharmaceutical Meeting, April 17th.

Since the remarkable property possessed by preparations of glycyrrhizin was noticed—of influencing the gustatory nerve so that bitter and disagreeable substances can be readily administered without betraying their presence—several forms of using this valuable addition to the Materia Medica have been suggested. An aromatic elixir of licorice has been one of the most desirable and successful of these attempts, and the writer submits a formula which seems to be satisfactory:

Take of	Cinnamon,	grams, six
	Star anise,	" four
	Coriander,	" seven
	Caraway,	" seven
	Tonqua,	" four
	Canella,	" two
	Nutmegs,	" two
	Cloves, all in fine powder,	" two
	Ammoniacal glycyrrhizin,	" forty
	Oil of orange (fresh),	" two
	Alcohol,	" five hundred and thirty-two
	Syrup,	" one thousand
	Water,	" four hundred and seventy-five

Mix the oil of orange with the alcohol and water and percolate the aromatics, recovering one thousand grams of percolate by pouring sufficient water upon the top to accomplish the purpose. Dissolve the ammoniacal glycyrrhizin in a small quantity of boiling water, and add to the rest after mixing with the syrup.

If an agreeable, simple elixir is at hand, the ammoniacal glycyrrhizin may be simply dissolved in it, in the proportion of one gram in fifty grams of simple elixir.

If it is desired to administer sulphate of quinia, all that is necessary is to pour into a teaspoon or glass a small quantity of the elixir, add the sulphate of quinia, and swallow before the bitter salt dissolves to any extent; then follow with a fresh teaspoonful of elixir, and the deception is complete.

BASHAM'S MIXTURE AND HALLER'S ELIXIR.

Mr. Editor—Inquiry having been made for mistura Basham, I forward the formula for insertion in your journal. The favor it has obtained renders it desirable that it should be published[1] in some pharmaceutical journal:

℞.	Tinct. ferri chloridi,	3 parts,
	Acidi acetici dil.,	4 parts,
	Liq ammonii acetatis,	32 parts,
	Curacoa,	8 parts,
	Syrupi cortic. aurantii,	12 parts,
	Aquæ q. s., ft.,	64 parts.

Under the names of *Elixir Halleri* and *Tinctura Halleri* the following mixture has been much prescribed, which is officinal in the German Pharmacopœia, as *Mixtura sulfurica acida*:

℞.	Acid sulphuric,	1 part,
	Alcohol (·835),	3 parts.

These are parts by weight, and if made by volume the following quantity should be taken:

Acid sulphuric,	f℥4¼
Alcohol,	f℥28¼

Yours, &c., Thos. S. Wiegand.

[1] See also formula in this journal, 1876, p. 137.

OINTMENT OF OXIDE OF ZINC.

By James Ruan, Ph.G.

The present formula in the "U. S. Pharmacopœia" for Ungt. Zinci Ox. does not seem to meet the favor of some pharmaceutists on account of the tediousness of the process and the time consumed in its manipulation. Recently, in the "Druggists' Circular," a formula was recommended which, no doubt, may produce an excellent result, but too marked a departure from that of the "Pharmacopœia," in any preparation, is to be condemned. And I cannot see that the amount of labor involved in the preparation is reduced in comparison with that in the officinal. What is surprising is that there should be so much trouble in its preparation by some pharmaceutists.

Some use a large mortar to grind the zinc into the lard, others exercise themselves with a paint mill, and lastly, another has gone into the kitchen and seized upon the flat-iron as the instrument par excellence to attain his purpose ; and yet all seemed to have overlooked a very simple element found in every drug store, viz. : aqua.

The following process, I think, will be found to answer all purposes, producing a preparation free from all roughness and unequaled for smoothness :

Rub the 80 grains of oxide of zinc with about f℥ss of water, on a tile, with a spatula, into a smooth paste, then incorporate the 400 grains of ointment of benzoin.

If a larger quantity is desired to keep on hand, the whole may be turned into an evaporating dish, placed on a water bath, applying a gentle heat to drive off excess of water, and stirring until cool, lastly adding the tincture of benzoin.

FORMULAS and PREPARATIONS of New MEDICAMENTS.

By the Editor.

We find in the French journals a number of formulas, which have been discussed before the pharmaceutical society of Paris, and from which we make the following selections :

Thymic Acid.—Add solution of potassa or soda to oil of thyme, agitate well for some time, separate from the uncombined hydrocarbon, decompose the alkaline solution by hydrochloric acid, wash the oily liquid with water, and purify by distillation. Thymic acid, or

thymol, thus prepared, is liquid, of a weak odor of thyme, little soluble in water, freely soluble in alcohol, possesses caustic properties, and has the composition $C_{10}H_{14}O$.

Solution of thymic acid (1 per mille).—Dissolve one gram of thymic acid in four grams of stronger alcohol, and add 995 grams of water. This solution is employed in lotions, injections, inhalations, etc.

Crystallized aconitia.—Powdered aconite root is exhausted by strong alcohol, containing one per cent. of tartaric acid; the liquid is distilled at a moderate heat, contact with the air being avoided; the residue is taken up with water to remove fatty and resinous substances, and then agitated with ether to remove coloring matter. An alkaline bicarbonate is now added to the acid aqueous solution until effervescense ceases, after which it is agitated with ether, the etherial liquid concentrated and mixed with some light petroleum benzin, when the aconitia will be obtained in colorless rhombic or hexagonal tables which are soluble in alcohol, ether, benzol and chloroform, and insoluble in glycerin and the oils of petroleum. It composition is represented by $C_{27}H_{40}NO_{10}$.

Crystallized nitrate of aconitia is readily obtained by neutralizing nitric acid, sp. grav. 1·42, with the alkaloid and concentrating the solution; the crystals are voluminous.

Apomorphia.—One part of pure morphia and twenty parts of pure hydrochloric acid are introduced into a strong tubular glass vessel having at least fifteen times the capacity of the mixture; the open end is then carefully sealed, the tube introduced into a metallic tube, closed by a screw cap, and the whole immersed for three hours in an oil bath, heated to between 140 and 150°C. (near 300°F.) After cooling, the tube is opened (no gas being disengaged), the liquid diluted with water, and bicarbonate of sodium added in excess, whereby apomorphia mixed with morphia is precipitated. The liquid is decanted, and the precipitate exhausted by ether (or chloroform ?), which dissolves only the apomorphia. The etherial solution is mixed with a few drops of hydrochloric acid to precipitate crystalline chlorhydrate of apomorphia, the crystals are rapidly washed with some cold water, and recrystallized from boiling water. To obtain the new alkaloid from this hydrochlorate, its concentrated aqueous solution is precipitated by bicarbonate of sodium, the white precipitate is rapidly washed with a little cold water and at once dried.

Thus prepared, apomorphia is a greyish amorphous powder, which is pretty freely soluble in water, the solution rapidly turning green in contact with air; its solution in syrup, kept in well closed vials, does not undergo this change. It is distinguished from morphia by its complete solubility in ether and benzol; it is reddened by nitric acid, and turns brown with iodic acid, but ferric chloride imparts a rose (not a blue) color. Composition, $C_{17}H_{17}NO_2$.

Monobromated camphor is recommended to be prepared by pouring upon camphor contained in a retort a thin stream of bromine until the camphor is liquefied, heating by a water bath until bromhydric acid ceases to be given off, and crystallizing the residue from boiling alcohol.

Cataplasm of Fucus crispus.—A sheet of carded wadding is evenly spread out, a concentrated mucilaginous infusion of Fucus crispus (Irish Moss) poured on it, and this covered with another sheet of wadding of the same size. By beating lightly with a brush, the jelly is made to penetrate the wadding very evenly, and the whole is exposed to the moderate heat of a drying closet until the water has been expelled, when it resembles a sheet of thick cotton and has acquired no odor. When intended for use, sufficient of the wadding is placed in a large plate and moistened with nearly boiling water, whereby the jelly swells considerably, the saturated solution of the emollient principles of the fucus remaining inclosed in the wadding.

Syrup of Chlorhydrophosphate of Calcium.—12·50 grams calcium phosphate (prepared by precipitating chloride of calcium with phosphate of sodium) are diffused in 340 grams distilled water, and just sufficient (about 8 grams) hydrochloric acid added to dissolve the calcium salt; 630 grms. white sugar are dissolved in the liquid without heat, and 10 grms. essence of lemon mixed with the strained syrup.

Syrup of lactophosphate of calcium is prepared, like the preceding, from 12·50 grm. calcium phosphate, sufficient (about 14 grms.) cocentrated lactic acid, 340 grms. distilled water, 630 grms. sugar, and 10 grms. essence of lemon.

Syrup of acid phosphate of calcium is prepared in precisely the same manner, only substituting for the acid a just sufficient quantity (about 18 grams) of phosphoric acid, sp. grav. 1·45.

The solutions corresponding to the three syrups above are made by employing 17 grams of the calcium phosphate, increasing the corres-

ponding acid in proportion, and using enough distilled water to make the whole weigh 1,000 grams.

Glycerite of Sucrate of Calcium.—Mix 80 grams of burned lime with 160 of sugar, and add in small quantities, gradually, 700 grms. of water. After 24 hours, filter, add to the filtrate 160 grms. glycerin, and enough water to make 1 liter.

Liniment of Sucrate of Calcium.—Olive oil, 200 grms.; glycerite of sucrate of calcium, 100 grms. Mix.

Infusion of Coca.—Coca leaves 10 grms., boiling water 1,000 grms.

Wine of Coca.—Bruised coca leaves 30 grms., 60 per cent. alcocohol 60 grms., macerate for 24 hours; then add wine (vin de Lunel) 1,000 grms., macerate for 10 days with frequent agitation, and filter.

Elixir of Coca.—Coca leaves 100 grms., 60 per cent. alcohol 600 grms., macerate for 10 days, express strongly, and mix the liquid with 400 grms. simple syrup. Filter.

Extract of coca is made by displacement with 60 per cent. alcohol, and evaporation to a soft extract.

Syrup of Coca.—Coca leaves 100 grms., boiling water 1,000 grms., infuse for 24 hours, express, filter and dissolve 175 grms. sugar in each 100 grms. of the filtrate.

Iodinized Cotton.—2 grms. of finely-powdered iodine is sprinkled over 25 grms. of cotton as uniformly as possible, which is then introduced into a wide-mouthed glass stoppered bottle that had been kept for a few minutes in nearly boiling water to expel some air. The stopper is then securely fastened and the bottle heated for at least two hours to a temperature of 100°C., until the cotton has become uniformly impregnated with the iodine. The bottle must be allowed to cool before it is opened, and the cotton, which contains 8 per cent. of iodine, must be kept in glass-stoppered vials (see also "Amer. Journ. Pharm.," 1876, p. 131).

Diastase.—Malt, of which the germ has attained two thirds the length of the barley grain, and dried at 50°C., is ground, macerated at the ordinary temperature for 5 or 6 hours with twice its weight of water, then expressed, filtered and the liquid mixed with twice its bulk of 95 per cent. of alcohol. The precipitate is collected, spread in thin layers upon plates of glass, and rapidly dried in a current of air at a temperature of 45°C.

8·5 grm. of diastase added to 200 grm. of paste containing 10 grm. of starch yield a liquid which filters very readily and decolorizes five times its volume of Fehling's solution.

ON DETECTION OF ADULTERATIONS IN OLEUM THEOBROMÆ.

By Edward Lamhofer, Ph.G.

(*Abstract from an Inaugural Essay.*)

As the purity of some of the commercial samples of cacao-butter has lately been suspected, I have made, at the suggestion and under the direction of Prof. Maisch, an investigation of the article, with a view of ascertaining its *fusing point, adulterations and mode of detection.* My first object was to procure an oil of doubtless purity, which I could use as a standard in my researches. This I obtained by packing the finely-ground seeds of the principal commercial varieties of cacao into a long conical percolator, and extracting the fat by means of petroleum-benzin. The benzin was then removed by spontaneous evaporation, and the oil purified by melting it and filtering, while hot, through paper. The yield of oil by this process varied from 38 to 51 per cent., viz.: Guayaquil, 46 per cent.; Carracas, 38 per cent.; San Blass, 45 per cent., and Balli, 51 per cent.

Guayaquil, Carracas, San Blass and Maracaibo are generally used here in the manufacture of chocolate, and it is from these varieties that we obtain our commercial oil. The species called "Balli" is from the small island (Balli) east of Java, and was obtained from the Dutch Department of the Centennial Exposition. In order to ascertain the fusing point, the oil was melted and drawn up in capillary tubes of the thickness of a knitting needle, and about one and a half inch in length. To get the oil completely congealed and hardened, the tubes were exposed to a freezing temperature for several days. As it was my intention to ascertain if and in what measure the fusing point could be used as a criterion for the purity of the oil, I tried also several commercial samples and samples which I adulterated with mutton- and beef-suet. The results were as follows: Guayaquil melted at 91°F.; Carracas at 91·5°; San Blass at 90°; Balli at 89·5°; commercial sample A at 90°; commercial sample B at 91·5°; Carracas contaminated with 5 per cent. mutton suet at 91·5°; Carracas with 5 per cent. beef suet at 91°, and Carracas with 20 per cent. beef suet at 85°.

The fusing point varies between 89° and 91·5°F. The British "Pharmacopœia" and some standard works in this country place the fusing point erroneously at 122°F. I came to the conclusion that the fusing point, as a means for determining any adulteration of the oil,

cannot be relied on, as an amount of animal fat from 5 to 10 per cent. is not indicated at all, and a larger adulteration is not likely to occur, as the taste and odor would be sufficient to betray such a gross sophistication.

To ascertain the purity of the different oils, I applied Björklund's test as given in the "Pharmaceutische Zeitschrift für Russland," 1863–1864, p. 401. This is done by dissolving in a test-tube 5 grs. of the oil in 10 grs. of purified ether, sp. gr. 0·728, shaking the mixture until the solution becomes clear, and then immersing the tube in water of the temperature of 32°F. By this method I obtained the following results: *Balli.* After 2½ minutes the fat commenced to crystallize out in small granules of the size of a pinhead; after 10 minutes, the solution was still transparent and the separation of crystals continued with increased rapidity, forming on top of the solution, and then falling to the bottom; after 30 minutes the whole of the fat had crystallized out. Left at a temperature of 58°F. for several hours, the oil became re-dissolved, forming a yellowish and perfectly transparent solution.

Carracas. The separation of crystals commenced after three minutes, they being somewhat larger than in the preceding; after ten minutes the same phenomenon as in Balli; after thirty-eight minutes the contents of the tube became solidified, re-dissolving after standing at the temperature of 58°F.

Guayaquil. Crystals appeared in the clear solution after five minutes. The complete separation and re-dissolving took place as in the two preceding varieties.

San Blass and *commercial sample A* behaved the same as Carracas.

Commercial sample B was more than five years old, and of a rancid odor and taste. The formation of those minute crystals occurred only after fifteen minutes, and it took nearly an hour before the whole became crystallized.

I tried also the behavior of mutton suet and commercial stearin dissolved in ether, and subjected to the same test, and observed that neither one of them gave a clear solution with ether, but formed a mixture resembling an emulsion.

Dissimular was the result I obtained with mixtures of these fats and pure cacao-butter. Thus, a mixture of 50 per cent. of either one with the latter gave as clear a solution as pure oil, which, however, on immersing in water congealed nearly at once. Oil, which I adulterated with

5 per cent. of suet, became cloudy in two minutes after dissolving in ether and exposing to water of 32°F.; the cloudiness gradually became more intense and increased, until after ten minutes a few crystals of cacao-butter separated out of the milky liquid. In forty minutes the separation of the oil was complete. Leaving the tube stand at a temperature of 58° F., unlike the pure oil, it did not re dissolve to a transparent solution, but preserved a remarkable cloudy appearance. In a sample contaminated with 2 per cent. of stearin, the solution acted similar, with the exception that the turbidity was not quite so intense.

I further tried the behavior of pure cacao butter and mixtures of this oil and stearin in solutions of petrolem benzin, forming a mixture in the same proportion as with ether. I obtained with this solvent nearly the same results, differing only in this respect, that the separation of crystals in pure solutions occurs somewhat slower, and adulterated oils when subjected to this test do not become completely separated when immersed in water, even when left in there for several hours; while the solutions in ether solidify generally between thirty and forty minutes. The methods which indicate the purity or adulteration of the oil may be summarized as follows: Pure cacao dissolves entirely in ether or benzin, separating out in minute granular crystals when immersed in water of 32° F., the liquid portion remaining transparent until, after thirty or forty minutes, the whole of it is solidified. 2d. When, after solidification, the oil is left to remain at a temperature of about 58° F., it will redissolve, forming a transparent solution.

Adulterations with animal fats are indicated, 1st, by the cloudy appearance of the solution which follows after immersing in water of 32° F.; 2d, by the slow and incomplete congealment of the oil when subjected to the test with petroleum benzin.

The amount of sophistication is shown, 1st, by the more or less intense cloudiness, and by the slow or rapid formation of it with the above test. Largely adulterated oils congeal almost instantly, while the turbidity of a solution with 2 per cent. of stearin becomes visible only after two minutes.

2d. By the more or less complete congealment of the oil when treated with petroleum benzin.

3d. By the more or less intense cloudiness of a congealed solution when left for twelve hours at 58° F. If largely adulterated, the mixture will not become liquid at all at that temperature.

The reason for the different behavior of adulterated oils is found in the fact that pure cacao butter when subjected to this test separates from its solution in minute granular crystals, which are gradually formed, while animal fats, under the same circumstances, congeal at once and "en masse." When, therefore, mixtures of these fats are tested in this way, the animal fat will separate at once, causing a turbidity, and thereby delaying or obscuring the formation of the small crystals of cacao butter.

The opaqueness of sophisticated oil, when the mixtures are left at 58° F., seems to be due to the insolubility of animal fat in ether or benzin at that temperature, remaining undissolved in the clear solution of cacao butter, and thus indicating even a minute quantity of such adulteration.

EXAMINATION OF A CURE FOR LOVE OF LIQUOR.

By John M. Maisch.

During the winter of 1873–74, I received a small sample of a white powder, accompanied by a printed slip, stating that the powders had been known in Germany for a long period as "Das wunderbare Heilmittel," the wonderful remedy, and that they had been the acknowledged instrument of rescuing many thousands from the graves of drunkards. Regarding their effects and use the directions stated :

"The peculiar effect of this remedy is to gradually remove that terrible knawing sensation of the vitals spoken of ; imparting by its action a natural, healthful tone and vigor to the whole nervous system, and promoting a desire for hearty, generous *food*, which should be freely supplied. Soups, stews or roasts of oysters, clams or other shell fish, have proved to be very valuable allies with the action of the powders. Hot coffee or tea, with their smoking aromatic odors greeting the appetite of the patient on first rising in the morning, or when coming to reason after a debauch, have, in very many instances, aided the remedy in its good work, and assisted in warding off desires for alcoholic stimulants.

"These powders are so compounded that (being first dissolved) they may be administered in coffee, tea or ordinary drink to the person whom it is desired shall be cured, and should be given during his or her sober intervals."

The originator was one Dr. Henry Zell, who sold them at first at the rate of $3.00 per dozen, but "with the view of doing greater good to a greater number," offered them then at $1.00 per dozen, or $5.00 for six dozen.

It had been the intention to make a quantitative analysis, but an ap-

plication for one or two unopened powders was not responded to, and the quantity received being quite minute, it was barely sufficient for a few qualitative experiments which were made by Mr. Wm. L. Harrison, of Petersburg, Va., who reported his results as follows :

"The powder was partly soluble in water. The solution, like the powder, had a purely sweet taste, and on the application of Trommer's test a brick-red precipitate of cuprous oxide was obtained, showing the presence of *sugar*. The undissolved white powder dissolved readily on the addition of dilute acid with slight effervescence, indicating a *carbonate*. Of bases, *magnesium* alone was found. A second portion of the original powder was ignited, and the white residue dissolved by a drop of hydrochloric acid; the solution was not affected by sulphuretted hydrogen or sulph-hydrate of ammonium; carbonate of ammonium produced a white precipitate, which was completely soluble in chloride of ammonium, and again precipitated by phosphate of ammonium. The liquid filtered from this precipitate, evaporated and ignited, left no residue. The powder, therefore, consists of *sugar* as the main ingredient, with a little *magnesium carbonate*."

It will be seen from these few experiments that a brisk sale of these powders would benefit that celebrated doctor's pocket, at least to the same extent as a good dose of magnesia would assist in restoring a toper after a debauch, particularly when combined with "hot coffee or tea." Although that doctor is not quite correct in asserting the powders to be "vegetable in their nature," yet we believe him when he warrants them "never to sicken the patient," and to be "entirely harmless."

AN EXPLANATION.

PHILADELPHIA, April 12, 1877.

Editor American Journal of Pharmacy:

My attention has been called to an unlooked-for interpretation of a sentence in my paper, headed "Adulterations," which was published in the March number of the "Journal." On page 130, after alluding to a firm of this city, I continue thus: "It is but a repetition of that of many others," and this has been construed to refer likewise to "this city," an interpretation which I confess might be given to the sentence, but which was not in the least intended. I can hardly believe that any of your readers should have accepted the erroneous construction

as having been designed by me; but, to guard against any possible imputation, and knowing as I do that the manufacturing and wholesale drug houses of this city compare favorably in character and integrity with those of any other city of our country, I would request you to bring this explanation to the notice of your readers, and oblige

Yours, etc., RICH. V. MATTISON.

GLEANINGS FROM THE FOREIGN JOURNALS.

BY THE EDITOR.

Detection of Free Mineral Acid in Vinegar.—Vinegar always contains organic salts of the alkalies, which on evaporation and incineration are converted into carbonates. By the addition to the vinegar of a mineral acid in sufficient quantity, these salts are decomposed, and on evaporation and ignition the ash left will have a neutral instead of an alkaline reaction. Based upon these considerations, the following method for the estimation of free mineral acid has been devised by Otto Hehner: 50 cc. of the vinegar are mixed with 25 cc. of decinormal soda solution, or with a sufficient quantity so that on evaporation and incineration an ash having an alkaline reaction is left; the residue is dissolved in decinormal sulphuric acid corresponding to the soda solution, boiled to expel carbonic acid, filtered, the filter washed with water, the liquid reddened by litmus and neutralized by decinormal soda solution, the volume of which indicates directly the proportion of free mineral acid present, 100 cc. of the standard solution corresponding to 0·49 gram of H_2SO_4.

The same process is likewise applicable for the determination of free mineral acid in *lime-* and *lemon-juice.—Phar. Jour. and Trans.*, Nov. 11, 1876, from the *Analyst.*

Purification and Uses of Petroleum.—M. Masson, pharmacien, of Lyons, has succeeded in removing the disagreeable odor of petroleum by the following process: Into a vessel containing 100 kilos of petroleum are separately introduced, by means of a long funnel, 60 grams each of sulphuric and nitric acid, and 500 grams of stronger alcohol are carefully poured upon the surface of the petroleum. The alcohol gradually sinks to the bottom, and when coming into contact with the acids heat is developed and some effervescence takes place, but not in proportion to the quantity of the liquids. Etherial products

of a very agreeable odor are formed, and the substances thus treated acquire an analogous odor, at the same time becoming yellowish in color. The operation lasts about an hour, after which the liquids are thoroughly agitated for some minutes with water, and after resting for eight or ten hours the purified petroleum is drawn off.

The lower stratum, which is a mixture of the acids, water and alcohol, may be used for deodorizing the heavy oils of petroleum, by agitating them well for twenty minutes, and after twelve hours washing the oil twice with milk of lime, to remove the free acids. It will then have the same, but a weaker odor, as the light petroleum first treated, and answers well for lubricating purposes.

Petroleum thus purified may be used in pharmacy for many purposes. All the tinctures for external use may be prepared with it, like the tincture of arnica, alkannet and camphor; it may be used for dissolving ether and chloroform, like alcohol, and, combined with fats or glycerin, promises to be of great utility in the treatment of skin diseases and for other purposes.

The author calculates that alcohol is annually used in French pharmacy amounting in value to at least two million francs, of which about 70 per cent., representing an annual expenditure of 1,400,000 francs, might very properly be replaced by this purified petroleum, which will also undoubtedly find many industrial applications.—*Rép. de Phar.*, 1876, p. 742.

Generation of Sulphurous Acid for use as a Disinfectant.—Thos. W. Keates proposes for this purpose to burn carbon bisulphide in a suitable lamp, either pure or mixed with fixed oils or liquid hydrocarbons, such as petroleum; 100 grs. of carbon bisulphide will thus yield 168 grs. or 245 cubic inches of sulphurous acid. In a room containing 7,300 cubic feet, it was found that by burning 280 grs. of the bisulphide the atmosphere was so far charged with sulphurous acid that it was impossible to remain in the room for more than a few seconds.

The boiling point of carbon bisulphide being as low as 110°F., it is necessary that the lamp in which it is burned should be furnished with a well-fitting screw cap.—*Chem. News*, Dec. 8, 1876, from the *Lancet*.

Thos. Stevenson avers that he has used that method for generating sulphurous acid for nearly seven years, and that no special form of lamp is required, but that an ordinary porcelain or copper dish may be used and the liquid in it ignited with a match. Instead of generating

280 grs. of sulphurous acid, he recommends at least five times the quantity named above, so that the room might contain one-tenth per cent. of the disinfecting gas.—*Ibid*, Dec. 15.

Spiritus Formicarum Containing Lead.—A. Geheeb reports having met with this spirit, which is still often used as a domestic remedy in some parts of Germany, containing considerable lead, which was probably dissolved from the cooler.—*Archiv d. Phar.*, Jan., 1877, p. 41.

AN ADULTERATION OF ACONITE ROOT.

By E. M. Holmes, F.L.S.,
Curator of the Museum of the Pharmaceutical Society.

Aconite root possesses such powerful properties that it is very important the medicinal article should be, as far as possible, of uniform strength and quality. Yet this is by no means the case, for it is difficult to find in a commercial sample one root in a dozen which upon fracture appears sound and in good condition. This is due, according to Hanbury, to its being gathered indiscriminately by peasants, who regard neither the most advantageous time for collection, nor the proper species. This is not to be wondered at, considering that the wholesale price in this country is as low as 6*d*. per. lb. As the root is sold by the German peasants to buyers who obtain a profit by supplying wholesale dealers in Germany, and these again have to obtain a profit before it is exported to this country, it is obvious that the prices paid to the peasants must be too small to pay for careful collection.

In some districts aconite root is said to be gathered by intelligent herb and root collectors, who are well acquainted with the plants they gather, but what is collected by them is probably retained for home consumption, and the inferior samples exported.

From the cheapness of the root, and from the fact that few roots have the distinctly conical appearance of aconite, it is evident that it would scarcely pay to adulterate it. Adulteration, then, must either result from careless collection or from accidental admixture.

The root which has lately been found mixed with aconite is that of Masterwort *Imperatoria Ostruthium*, Lin., an umbelliferous plant, official in the Edinburgh Pharmacopœia so late as 1792. It is a native of mountainous countries, and grows in similar districts to those in which aconite is found. As it is still official in the German Pharmacopœia, its accidental occurrence in aconite root from Germany is not surprising.

Its value in this country is double that of aconite root, and it is

obvious, therefore, that it has not been purposely used as an adulteration.

In the sample examined the masterwort root amounted to about 5 per cent.

The characters by which it may be distinguished from aconite root are as follows:

The rootstock, Fig. 1, for it is properly so called, is less tapering than aconite root, is slightly compressed, and exhibits several warty zones, indicating periods of growth. In some specimens these are much less prominent than in others, but can always be traced. The whole of the rootstock is finely wrinkled transversely, so as to give it a somewhat annulated appearance. The transverse section presents very marked characters. The central portion is of a yellowish white color, and exhibits a more or less complete ring of brownish dots. The portion next the bark presents elongated dots of a paler color, which give this portion of the section a radiate appearance. With the aid of a lens these dots are seen to be filled with an oily or resinous substance. The cortical portion is very thin. The rootstock has an odor comparable to bruised ivy leaves, or to the plant commonly known as cow parsley (*Chærophyllum sylvestre*, Lin.), and a pungent, slightly bitter taste.

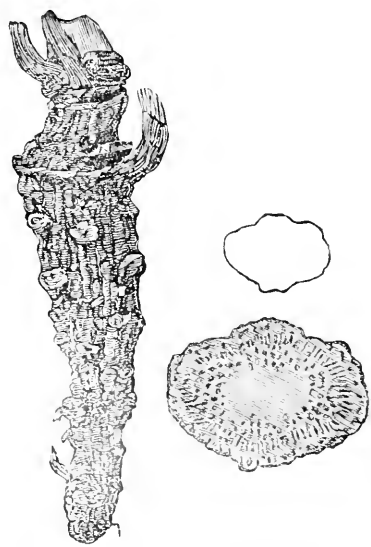


Fig. 1. *Imperatoria Ostruthium*, Lin.[1]

Aconite root is very variable in appearance internally; frequently the centre is quite hollow. Some pieces have a brownish color, others are white and starchy, and a few present a resinous fracture. In a sound root, however, which is usually starchy or slightly resinous, a faint line may generally be traced, which marks out the meditullium. This line has usually five to nine prominent angles, see Fig. 2, the

[1] In the wood-cuts the roots are represented of the natural size; the sections are shown both of the natural size and magnified.

number of angles being larger as the section approaches the top of the root. If the root be wetted and examined with a lens, the line is seen to consist of an irregular line of vessels, which form small bundles in the apex of the projecting angles. The cortical portion occupies nearly half of the circumference of the root.

From the above characters it will be observed that the presence of oil receptacles in the masterwort root at once distinguishes it from aconite. A spirituous tincture of masterwort, when dropped into water, gives a blue fluorescence, resembling that of quinia, and a slight milkiness, and communicates to the water its peculiar odor. By these characters its presence might probably be detected in a mixture containing tincture of aconite.

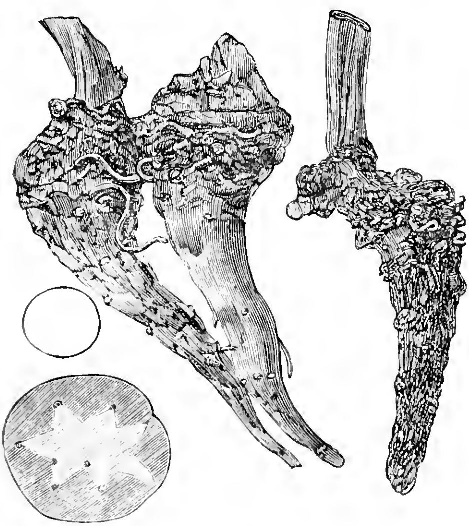


Fig. 2. *Aconitum Napellus,* Lin.

Although the small percentage in the sample examined would lead to but very slight diminution of strength in the tincture of aconite made from it, yet the appearance and odor communicated to a mixture containing such a tincture might lead to much inconvenience in pharmacy, and throw discredit upon the dispensing department.

It is quite time that the attention of cultivators of medicinal plants in this country should be drawn to the bad quality of the imported root, and that attempts should be made to cultivate it extensively in this country. It is very probable that, as in the case of henbane, a good article would command a fairly remunerative price. It is obvious, also, that until it is possible to obtain a plentiful supply of the roots of *Aconitum Napellus*, free from any admixture of other species, it will not be possible to obtain an accurate knowledge of the alkaloids contained in that species.—*Phar. Jour. and Trans.*, March 17, 1877.

ON OSTRUTHIN.

By E. von Gorup-Besanez.

This body was discovered by the author in 1874 (see Proceedings American Pharmaceutical Association, 1875, p. 453), in the root of Imperatoria ostruthium. The following is an outline of the process by which the largest yield has been obtained:

The young roots of masterwort, 1 to 2 years old, are cut and digested with 90 per cent. alcohol at 50 to 60°C. until the liquid ceases to become colored; the mixed tinctures are distilled to one-third, and this then evaporated until on cooling a thick liquid remains. This residue is exhausted by a mixture of three parts of ether and one of ligroin, of low boiling point, until a firm plaster-like mass remains. The solution is mixed with more ligroin, which separates a brown sticky mass, and the decanted liquor is evaporated spontaneously from flat dishes, and if necessary decanted from the oily sediment forming. Yellow crystals are afterwards deposited, which are freed from adhering resinous matter by spreading them upon porous plaster tiles. The crystals are then dissolved in ether, the solution again mixed with some ligroin, freed from the deposited oily matter, and evaporated spontaneously. Repeated recrystallization from ether yields larger but still yellow crystals, which are obtained white by dissolving them in alcohol and adding water until a permanent precipitate begins to appear.

Ostruthin crystallizes from ether in the triclinic system, the crystals resembling rhombohedrons. It fuses at 115°C. and congeals at 91°C. to a wax-like mass, becoming crystalline; is inodorous, tasteless, burns with bright smoky flame, and yields by dry destillation a thick yellowish oil, with an odor resembling Canada balsam. It is insoluble in cold water, sparingly soluble in benzol and petroleum benzin and freely soluble in alcohol and ether. The alcoholie solution has a faint blue fluorescence, which becomes magnificently blue on the addition of water; more water precipitates it. All its solutions are neutral and optically inactive. Its composition is $C_{14}H_{17}O_2$.

Ostruthin hydrochlorate, $C_{14}H_{17}O_2HCl$, is obtained by passing muriatic acid gas into a not very dilute alcoholic solution of ostruthin, which congeals; the mass is then washed with water and crystallized from ether. It forms white, tasteless and inodorous needles, soluble in alcohol, ether, benzol and chloroform, less in petroleum benzin.

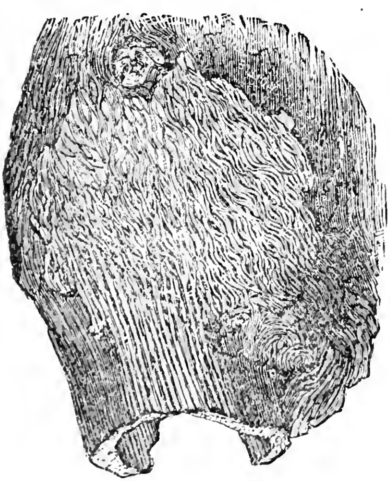
Ostruthin hydrobromate is prepared in the same way, but on attempting to crystallize from ether, it was decomposed, bromine being liberated.

A combination with hydriodic acid could not be obtained, owing to the liberation of iodine.

Among the products of decomposition obtained by adding ostruthin to fusing potassa, *resorcin* was found. Treated with strong nitric acid, it is first converted into a resinous body and finally into *oxalic* acid; but when boiled for a long time with nitric acid, diluted with three parts of water, it yields *styphnic* and a little *oxalic acid.*

Chlorine yields with difficulty, bromine more readily, substitution compounds.—*Liebig's Ann. d. Chem.*, clxxxiii, p. 321–343.

AVA, OR KAVA-KAVA.[1]



1. Superficial longitudinal section of root, showing the meshes of wood beneath the thin bark.

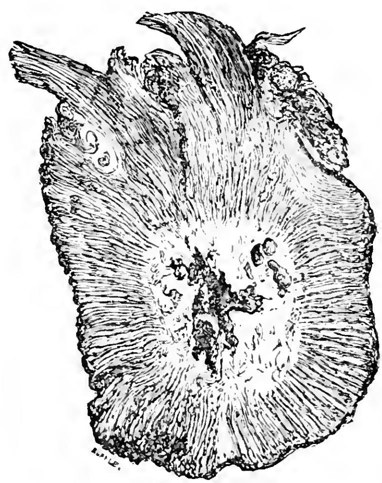
This plant, *Piper methysticum*, Miq., is cultivated in Tahiti, Hawaii and many other islands of the Pacific Ocean, and is known there under the names of *yaquona*, *ava-ava*, *kawa* and *kava-kava.* It is a shrub about 6 feet high, with branches attaining a thickness of 1 to $1\frac{1}{2}$ inches. Leaves 4 to 8 inches long, nearly as wide, cordate with a short acumination, apparently smooth, but under the magnifier appearing covered with short hairs mainly upon the veins, 10 to 12 ribbed with the three central veins usually close together for about half an inch; petiole 1 to $1\frac{1}{2}$ inch long, dilated at the base. *Piper excelsum*, Forst., indigenous to New Zealand, resembles the former plant, and is known there as kava-kava, but is used only as tea and against tooth-

[1] Condensed from the "Pharmac. Jour. and Trans.," Aug. 19, 1876, and from "Phar. Zeitschr. f. Russ.," Oct.; the cuts from "New Remedies."—EDITOR.

ache. Its leaves are usually about half the size of the former, and are 5 to 7 ribbed.

The fresh root weighs 2 to 4 lbs., occasionally even 20 lbs., and loses more than half its weight on drying. It is large and fibrous, but rather light and spongy. Underneath the very thin greyish-brown bark a net-work of the woody tissue becomes apparent, the meshes being filled with a yellowish-white cellular tissue, while some are quite empty. A variety known as *marea* is lemon-yellow, and another, called *avini-ute*, flesh-colored internally.

The transverse section shows numerous linear wood bundles radiating from near the centre and separated from each other by broader soft medullary rays; the soft central portion contains but few anastomizing wood bundles, which form a net-work and are placed at right angles to the radiating bundles. The agreeable odor of the root reminds of lilac (*Syringa vulgaris*, L.) and meadow-sweet (*Spiræa ulmaria*, L.). It has a faintly pungent and scarcely perceptible bitter taste, increases the flow of saliva, and produces a slight astringent sensation.



2. Transverse section of root.

The root and extreme base of the stem are usually employed in the form of infusion made by macerating a drachm of the scraped drug in a quart of water for five minutes. Unlike other remedies for gonorrhœa, this infusion has an agreeable taste; its slight bitterness increases the appetite and does not produce nausea.

According to Cuzent, the root contains a light yellow volatile oil, 2 per cent. of an acrid resin, and about 1 per cent. of an indifferent crystalline principle, called kavahin or methysticin, which is obtained in needles from a concentrated tincture, is colored red by hydrochloric acid, the color changing to bright yellow on exposure to the air, and acquires a purplish-violet color changing to green, by concentrated sulphuric acid (see, also, "Amer. Jour. Phar.," 1860, p. 133).

In small doses, kava acts as a stimulant and tonic, and produces in larger doses an intoxication which differs from that produced by alcohol, being characterized by drowsiness and incoherent dreams; excitement on hearing noise is said to be produced by the root grown in moist soil. Since neither the resin nor kavahin are soluble in water, the medicinal properties do not depend upon these principles. It has been used with success in erysipelatous affections, but when used as an intoxicating drink produces a cutaneous disease, which in Tahiti is called *arevarea*, and appears in old topers in the skin becoming dry, cracked and ulcerated. The natives of Nukahivi use kava in phthisis and bronchitis, a small dose being taken at bedtime; it has also been locally employed in gout and internally in gonorrhœa since 1857.

Recently a drug was received from Paris under the name of kava-kava, which on examination proved to be composed of matico leaves and anatto fruits. (For further information on this drug see "Amer. Jour. Phar.," xvi, p. 105, and xxvi, p. 236.)

NOTE ON A PIPER CALLED JABORANDI, IN THE PROVINCE OF RIO JANEIRO.[1]

By A. Gubler.

Besides the jaborandi of Dr. Coutinho (*Pilocarpus pennatifolius*), the sialogogue and sudorific properties of which are so remarkable, there exists in Brazil, as is known, a large number of plants bearing the same popular name, which are used against the bites of serpents, etc. All the botanical species, however, are included in two families, Rutaceæ and Piperaceæ. Among the latter, *Piper citrifolium* and *P. reticulatum* have been mentioned as particularly efficacious. A jaborandi from the province of Rio Janeiro, which has been the subject of a note in the "Journal de Thérapeutique," for November 25th, by Professor Gubler, appears to be referable to either of these species, which perhaps should be combined in one.[2]

The plant is a shrub, usually attaining, but sometimes considerably exceeding, a metre in height. The stems are fasciculated at the base, simple and denuded for half their length, cylindrical, very straight and articulated like the bamboo; towards the top they bear dark-green leaves that are alternate, shortly petiolate, oval-lanceolate or slightly

[1] "Journal de Pharmacie et de Chimie" [4], vol. xxv, p. 128.

[2] DeCandolle describes the leaves of *P. citrifolium* as being feather-veined, those of *P. reticulatum* as 7 to 9 nerved and rounded or cordate at base.—Editor.

PIPER METHYSTICUM, *Miq.*

PIPER CITRIFOLIUM, *Lam.*

obtuse. In the axils of these are sometimes found catkins of male flowers. The figure of the plant is from a sketch drawn by Dr. Jules Crevaux. A supply of the plant, collected by Dr. DaVeiga, of the Brazilian navy, accompanied the sketch, and has been investigated chemically, physiologically and therapeutically.

According to Prof. Gubler, the entire plant exhales a slightly-aromatic odor, which becomes more pronounced upon bruising the leaves between the fingers. When chewed, the taste is at first slightly acid, then warm and aromatic, and finally very piquant and comparable to that of pyrethrum root. This taste is met with in the stems, and especially in the roots, where it attains a high degree of intensity, chiefly in the moderately large portions, about the size of a crow quill, which are externally of a rather decided grey color. The more slender and whitish portions are rather insipid, and the finest have hardly any taste at all. These differences are dependent upon the constitution and thickness of the cortical layer, which appears to be the seat of the active principle.

When a picked fragment of the root is chewed, at first no sensation is produced on the palate ; the prickling is first manifested at a short interval after the vegetable tissue becomes impregnated with saliva. It would appear that the active principle of the drug does not exist ready formed in the plant, but is due to a special fermentation in the presence of water, similar to that which sets free oil of bitter almonds or oil of mustard. When once manifested, the piquancy rapidly acquires great energy, being accompanied by painful shootings and vibratory tremblings of the tongue and lips, as though these organs were traversed by an electric discharge. At the same time a very active secretion of all the buccal glands becomes developed, and especially an extraordinarily abundant salivation. These phenomena persist for a few moments after the sapid pulp has been rejected, but then decrease and disappear, leaving a sensation of freshness and a certain degree of anæsthesia of the palate. After a few minutes, however, all the parts return to their normal state.

Upon swallowing the saliva charged with the active principle, an impression of heat is produced at the back of the throat, which extends to the œsophagus and stomach, where it gives rise to a sensation resembling hunger.

The chemical composition has been studied by M. Hardy, who, in

some preliminary experiments with infusions, was able to demonstrate the presence of an alkaloid.

Some leaves and stalks were therefore powdered, and left to macerate for four days with three times their weight of 90° alcohol, acidulated with 8 grams of hydrochloric acid per liter. The alcohol was then decanted and fresh alcohol added, and this was repeated three times. The alcoholic solutions were concentrated by distillation, and the aqueous solution evaporated and decomposed by ammonia in the presence of excess of chloroform. Upon evaporation of the chloroform the base was left free, but still impure. It was therefore treated with water acidulated with hydrochloric acid, which dissolved the major part of it; the solution was filtered, evaporated and again decomposed by ammonia in the presence of excess of chloroform. Upon evaporation of the chloroform solution the base was deposited, having a crystalline appearance and slightly-yellowish tint.

The base presents the characteristic reactions of alkaloids. Its solution gave a white precipitate with iodide of mercury and potassium, and with iodine in iodide of potassium. Another portion of the leaves was distilled with water to obtain the volatile oil, but only a small quantity was collected, insufficient for investigation.

The alkaloid dissolved easily in water slightly acidulated with hydrochloric acid, and such a solution was used by Dr. Bochefontaine to study its physiological action upon animals. He found that it did not act upon the heart or influence the muscular contractility; it was not a convulsivant. It appeared to have the power to prevent the mechanical or electric excitations of the mixed nerves, such as the sciatic, from being transmitted to the muscles. It appeared even to possess the paralyzing power at the outset, and this property would seem to distinguish it with curare. Indeed, the paralyzing action of curare is usually preceded by some slight spasmodic movements, which have not been observed in frogs poisoned with the alkaloid of false jaborandi.

Prof. Gubler remarks that the effects observed after the administration of the plant to the human subject, although in small doses, had not led him to expect so violent an action from the alkaloid of the Rio piper. The first experiment, in 1875, with the comparatively fresh plant, did not reveal any great activity compared with the excessive power of *Pilocarpus pennatifolius*. Besides the peppery sensation in the mouth and throat and the heat in the stomach, doses of 4 to 6 grams

of the leaves in infusion only caused slight salivation and diaphoresis. More recent experiments have been still less fruitful. In a case of acute albuminous nephritis its effects were absolutely *nil;* whilst, in the same patient on the following day, an infusion of 4 grams of *Pilocarpus* jaborandi in 200 grams of water caused abundant salivation and sweating, and an increased excretion of urine.

From these negative facts Prof. Gubler draws the following conclusions:

(1) That there exists a striking difference between the mode of action of *Pilocarpus pennatifolius* and of *Piper citrifolium.* With an insignificant topical action the *Pilocarpus* manifests a diffused action of great energy; the second, though very aggressive to the organs at the entrance to the *primæ viæ*, appears to be nearly inert when it once enters the circulation.

(2) That this inertia of the *Piper* is more apparent than real, and due to the insufficiency of the doses employed. In future it will be desirable to administer larger doses of the leaves, or better still, of the root, to obtain physiological effects.

But if the alkaloid discovered by M. Hardy is a certain test of the efficacy of the *Piper citrifolium*, the experiments of M. Bochefontaine show that it will be advisable not to seek to obtain the first manifestations through the secretions, as the new agent is a poison of the motor system closely allied to curare.—*Phar. Jour. and Trans.*, March 10.

MINUTES OF THE PHARMACEUTICAL MEETING.

The College met April 17, at 4 p. m. Mr. A. P. Brown was called to the chair, and E. D. Boyer appointed regristrar *pro tem.* On motion of Prof. Maisch the reading of the last minutes was dispensed with.

Mr. Ch. L. Mitchell exhibited a mineral water from New Zealand, and the annual report of the Auckland Institute. Prof. Maisch presented the annual report from the Smithsonian Institution of the Board of Regents of that Institution, for the year 1875; from Dr. Weddell, a reprint from *Comptes rendus* of his essay, in which he advocates the use of cinchonidia in place of quinia in the treatment of intermittent fevers. Also, from Chas. W. Riley, Consul of the Orange Free State, a handsome case from the Centennial Exposition, containing a specimen of the so-called cream of tartar fruit, together with a number of seeds and the separated acidulous pulp; also, from the same gentleman, specimens of Japanese chemicals and medicinal plants, likewise from the late exhibition, and comprising oxide and sulphate of zinc,

golden sulphuret of antimony, acetate of lead, tartar emetic, sulphate of copper, flowers of Malva sylvestris, German chamomile flowers and hops.

In regard to the cream of tartar fruit, Prof. Maisch stated that it belonged to the genus *Adansonia*, and probably to *A. Gregorii*, which is stated to be a native of Northern Australia. The fruit is smaller, and the taste of the acidulous pulp differs from that of *A. digitata*, the baobab, of which handsome specimens had been on exhibition from Jamaica. In answer to a question he stated that he had not had the time yet to ascertain the composition of the pulp. He also called attention to the Latin names by which the Japanese chemicals were designated, and which were similar to those used in Germany and Holland; for instance, *Zincum oxydatum sulfuricum*.

Mr. Mitchell exhibited and explained the uses of a "pill finisher," consisting of a circular disk of brass, which is more durable than when made of wood.

Prof. Maisch presented several samples of *Capsulæ Catapotæ Plicatiles*, which are used in Germany to some extent in place of the wafer capsules introduced by Mr. Limousin, of Paris. The former are thin, like paper, folded by machinery, and being made of gelatin, may be readily closed by moistening the edges, become pliable when immersed in water, and may then be swallowed like wafer capsules, which latter, however, appear to be more elegant in appearance and more useful in application.

Prof. Remington read a paper on "Aromatic Elixir of Licorice" (see page 231), exhibited a sample of the preparation, and showed its effectiveness for disguising the bitter taste of sulphate of quinia. Mr. Brown stated that he made such an elixir by dissolving 8 grains of ammoniacal glycyrrhizin in 1 fluidounce of simple elixir. Inquiry having been made about a *compound elixir of eucalyptus*, which has been recently introduced for the same purpose, it was stated to owe its effects likewise to glycyrrhizin, but appeared to be flavored with oil of eucalyptus, besides other aromatics.

Mr. Gaillard read a paper on "Weights and Measures" (see page 226.) Remarks on the adoption of the metric system in medicine and pharmacy in our country were made by Professors Maisch and Remington and Mr. Bullock, who stated that its general adoption could be secured only by educating medical and pharmaceutical students in its use, so that they were able to think in this system without the necessity of calculation.

Prof. Maisch informed the meeting that the tables for converting apothecaries' weights and measures into grams, which were calculated by him and published in the February number of the "Am. Jour. Phar.," had been copied by the Treasury Department at Washington, D. C. Referring to the use of measures in British and American pharmacy, he remarked that it would be of interest to trace their adoption in Great Britain, since the Edinburg and Dublin Colleges had recognized the use of weights for liquids at a time when these were measured by the London College.

Prof. Maisch also called the attention of the meeting to two low-priced microscopes, on exhibition, both giving very clear definitions; one was a simple microscope, costing $12; the other, a compound microscope, at $35.

There being no more business before the meeting, a motion to adjourn was seconded and carried. Ed. D. Boyer, Registrar *pro tem.*

MINUTES OF THE COLLEGE.

PHILADELPHIA, MARCH 26th, 1877.

The annual meeting of the Philadelphia College of Pharmacy was held this day at the Hall of the College, No. 145 North Tenth street.

Robert Shoemaker, Vice-President, in the absence of the President, occupied the chair.

Sixteen members were present.

The minutes of the last meeting were read and approved.

The minutes of the Board of Trustees for the last three months were read by William C. Bakes, Secretary of the Board, and, on motion, adopted.

Letters from Charles Wirgman and J. H. Stein, tendering their resignations as members of the College, were read, and, on motion, accepted.

Thomas S. Wiegand, Librarian, read the following report for the year. It was on motion, accepted.

The Librarian respectfully reports that the work of completing the arrangement of the Library has occupied considerable time since the last report.

There have been received since last report, donations from the Smithsonian Institution, twelve annual reports which were not upon our shelves, and three quarto volumes of the "Contributions to Knowledge," published by the Institution; twelve quarto volumes of the "Memoirs of the Academy of Arts and Sciences of Boston" have been received in exchange for certain volumes of the "American Journal of Pharmacy;" twenty volumes of works on pharmacy and chemistry have been donated by Mr. Chas. Bullock; the reports of the Commissioner of Education have been received from that bureau; the catalogues of nearly all the different national exhibits at the Centennial Exposition, held last year, have been placed in our library, together with four maps, illustrative of the Empire of Brazil, which have been mounted properly so as to preserve them. The various exchanges received for our "Journal" that possess sufficient permanent value and interest have been placed in the hands of the binder; these will amount to nearly sixty volumes.

A number of valuable illustrated works on botany, that of Nees von Esenbeck, known as the Düsseldorf collection of medical plants, also the works of Pavon, Weddell and Eliot Howard on the Cinchonas are now in the Library, having been procured by the funds left by our former member, Algernon S. Roberts. A nearly complete set of "Annales de Chimie et de Physique," the entire set of "Archiv der Pharmacie," the complete set of "American Journal of Science and Arts," the London "Pharmaceutical Journal and Transactions," the "American Journal of Pharmacy"—all of which are standard works of reference—while many others, equally valuable in the collateral branches of science, will enable members desiring information to pursue their investigations with facility. Should any member have any work belonging to the Library in his possession, he would confer a favor by informing the Librarian; vol. III, first series, of "American Journal of Pharmacy" has been missing for a long time.

As the care of these volumes has been entrusted to the Librarian, upon consultation with several members, he has had prepared two books of blanks—one a receipt, to be signed by any one entitled to the use of the Library, and the other a blank guarantee, to be filled up and signed by any member who wishes his assistants to enjoy the use of the Library; the first of these is of course destroyed when the book is returned; the other remains in force as long as the assistant uses the Library with the consent of his employer. These precautions have been found essential, as books have been borrowed, and the memoranda regarding them have been lost or mislaid and the books not returned.

Thomas S. Wiegand, chairman of the Sinking Fund Committee, read his report, showing an amount at interest and available for use, considerably in advance of that on hand last year. The report was accepted.

The report of the Publication Committee was read by Prof. J. M. Maisch, and is as follows. It was, on motion, accepted.

The Committee on Publication respectfully report that the "Journal" has been issued with a good degree of punctuality on the first of each month.

The committee has aimed at the publication of such a monthly number as would place in stock sufficient to meet a future expected demand; of these it has devoted fifty copies of each issue to be laid aside, and at the end of the year completing the volume, to have them tied up in volumes. These volumes are not broken for the supply of single numbers.

The accumulation of stock in "Journals" has induced the committee to offer the volumes from 1836 to 1852 at the price of $1.00; from 1853 (when the bi-monthly issue commenced) to 1869 at $1.50 per vol.

Of sixteen volumes the committee can only supply scattered monthly numbers.

The General Index to the first forty volumes did not meet with the attention it deserved from those possessing the "Journal." The committee thinks the advantage of the index will be more apparent in future years, and that but little loss will result to the College from the publication.

In common with all periodicals, the "Journal of Pharmacy" has felt the depression of the last year; collections have been attended with more delay, and the amount realized falls somewhat behind former years; there are but few debts, however, which will be ultimately lost. The number of subscribers and advertisers has kept up very wel , under the adverse condition of business.

The committee refers with pleasure to the energy and promptness of the Business Editor, as one of the elements of its sound financial condition.

HENRY N. RITTENHOUSE,
Chairman of Committee.

The Editor, in his report to the Publication Committee, alludes to the contributors to the "Journal" for the last year, and gives an account of the number who furnished original communications, and much other statistical matter of interest connected therewith. A considerable amount of matter was obtained for publication from the Pharmaceutical Meetings, which have of late been highly interesting and instructive. He says:

The Editor is pleased to report that not only has the "Journal" been regularly issued, but likewise that the interest manifested by its readers and contributors has been unabated.

The Editor would again urge upon the members of the College the importance of sustaining the Pharmaceutical Meetings, partly by attending them as regularly as possible, partly by the presentation of papers and by participating in the discussions.

Thanking the various authors for their valuable assistance, the author bespeaks for the "Journal" a continuation of the lively interest shown by all its numerous friends.

JOHN M. MAISCH, *Editor.*

The Treasurer of the Publication Committee, Mr. Bullock, presented his report, by which it is shown that, notwithstanding the depressed condition of affairs throughout the country, the financial condition of the committee is about equal to that heretofore exhibited, which may be attributed largely to the energy and ability of the Business Editor, whose favorable report entitles him to the thanks of the College.

The annexed report of Joseph P. Remington, Curator, was read, and, on motion, accepted.

Since the last report was presented, many alterations and additions have been made to the Cabinet.

A year ago the work of re-arranging the old specimens, and finding places for the new, was begun, and it was not until the latter part of May, 1876, that sufficient progress had been made to warrant an exhibition at the reception held in that month.

The International Exhibition has been the means of largely adding to the stock of specimens, until now there is a condition of affairs similar to that of three years ago, when the cry was for more room; there is this difference, however, that the number of specimens has now more than trebled.

The greater number of substances are now *distinctly*, and it is believed accurately, labeled, with the exception, however, of the recent additions, sufficient time not having elapsed to commence this work.

The thanks of the College are due for the presentation of the following collections of drugs, preparations, chemicals, etc.:

From Joseph Bosisto, of Victoria, Australia, thirty-eight specimens of Eucalyptus products and opium yielding 10 per cent. morphia; Morphia from the Victorian Opium; essential oil of Peppermint.

From A. Beslier, Paris, a handsome dried specimen of Thapsia Garganica, and sixteen samples of pharmaceutical preparations, including Baume Tranquille, Thériaque, Resin de Thapsia, various distilled waters.

From the Egyptian Commissioner, General H. Brugsch, twenty-three specimens, including Egyptian Opium, Poppy capsules exhibiting the incisions made in obtaining opium, Colocynth apples with the rind adherent Sesame seed, oil of Marjoram, etc.

From the German Commission, seventeen specimens of Anilin products, and chemicals.

From the Austrian Commission, for Jacques Pollok, fifty-six specimens of essential oils, essences and ethers.

From the Italian Commission, through Angelo Ganelli, eighty-three specimens of drugs, including Manna, Liquorice, Liquorice Root, etc.; chemicals of many kinds, Cream Tartar, Sulphur, etc.: pharmaceutical preparations, elixirs, salts, etc.

From E. H von Baumhauer, Netherlands Commissioner, thirty-two specimens of drugs from the colonies.

From F. Crace, Calvert & Co., a complete collection of Carbolic Acid products in the case in which they were exhibited.

From the Russian Commissioner, nine specimens of Isinglass, some being rare forms of this Russian product.

The committee upon the Cabinet purchased the valuable colleetion of Singapore products, exhibited by Behn, Meyer & Co., embracing Nutmegs, Cloves, Sago, Sago Flour, Nutmeg Fruit, Leaves, etc., Gum Copal, Tapioca Flour, Cubebs, Stick Lac, Pipe Gamboge, Mace, Cube Gambier, Flake Tapioca, Gum Damar, etc.

The total number of specimens in the Cabinet is 1592, of which number 988 are drugs, 291 chemicals and 313 miscellaneous preparations.

In concluding this report, the Curator would respectfully recommend the erection of additional cases to accommodate the new specimens, which otherwise will not be available for examination

JOSEPH P. REMINGTON, *Curator*.

On motion, the recommendation of the Curator, to have suitable cases erected to accommodate the specimens recently obtained from the Centennial Exhibition, was referred to the Board of Trustees for their action.

William C. Bakes presented a box, containing a book which contains all the proceedings of the semi-centennial meeting of the College held February 23d, 1871. It is intended that this box shall be opened at the Centennial meeting of the College, which will take place February 23d, 1921.

The package was accepted, and directed to be placed in the safe of the College.

Professor Maisch called attention to the suggestions made by Dr. Squibb in a recent pamphlet for changing the mode of revising the U. S. Pharmacopœia, and also to the objections presented by Dr. H. C. Wood to the method suggested therein.

The subject, in the opinion of Professor Maisch, was one fraught with great interest to the medical and pharmaceutical professions, and in order that the matter might be properly considered by the College, he proposed that a special meeting should be called on Monday, April 9th, at 3 o'clock P.M.

The subject was discussed by Professor Remington and others, all of whom concurred in the propriety of the meeting.

It was then, on motion, ordered that a meeting of the College be called on the day suggested, and a hope was expressed that the members generally would attend and participate in the discussion.

The Secretary was requested to invite the Professors of Chemistry and Materia Medica in the University of Pennsylvania, the Jefferson Medical College and the Women's Medical College to attend and take part in the deliberations.

This being the Annual Meeting, an election for officers, trustees and the standing committees was ordered. The Chair appointed Messrs. E. C. Jones and E. M. Boring tellers, who reported the following gentlemen unanimously elected to the positions enumerated below, viz.:

President—Dillwyn Parrish.

First Vice President—Chas. Bullock.

Second Vice President—Robert Shoemaker.

Treasurer—Samuel S Bunting.

Recording Secretary—William J. Jenks.

Corresponding Secretary—Alfred B. Taylor.

Board of Trustees—Robert Bridges, M.D., John M. Maisch, Daniel S. Jones, Thomas S. Wiegand, James T. Shinn, T. Morris Perot, William B. Webb, Joseph P. Remington.

Publication Committee—John M. Maisch, Henry N. Rittenhouse, Thomas S. Wiegand, James T. Shinn, Charles Bullock.

Sinking Fund Committee—Thomas S. Wiegand, T. Morris Perot, James T. Shinn.

Editor—John M Maisch.

Librarian—Thomas S. Wiegand.

Curator—Joseph P. Remington.

Then, on motion, adjourned. WM. J. JENKS, *Secretary*.

MINUTES OF THE SPECIAL MEETING.

PHILADELPHIA, April 9th, 1877.

A special meeting of the Philadelphia College of Pharmacy was held this day, at the hall of the College, to consider the proposed alteration of the mode of revising the "United States Pharmacopœia," as suggested by Dr. E. R. Squibb, of Brooklyn, N Y.

Besides the members of the College, there were a number of guests in attendance, amongst whom were Drs. W. S W. Ruschenberger, Horatio C. Wood, Chas. H. Thomas and Clara Marshall, of Philadelphia, and Professor P. W. Bedford, of the New York College of Pharmacy, all of whom had been invited to attend and take part in the discussion.

Robert Shoemaker, Vice-President, was called to the chair, and stated that at the last meeting of the College, two weeks previous, the meeting adjourned to meet on April 9th for the consideration of this subjcet.

That portion of the minutes of the last meeting which specified the object for which this meeting had been called was read and the chairman announced that the subject was now open for discussion.

PROF. J. M. MAISCH. Since I am the mover of this resolution for a special meeting, it is, perhaps, proper for me to say a few words to place the whole matter before this meeting. Dr. Squibb, of New York, at the meeting of the American Medical Association held a year ago, proposed that the mode of revising the "Pharmacopœia" should be entirely changed; and, more particularly, that the American Medical Association should take charge of the "Pharmacopœia."

This, in my opinion, is by far the most important portion of Dr. Squibb's proposition, since nearly all else is dependent upon this. The second important proposition, which, however, depends upon the first, is that the "Pharmacopœia" should be revised by a council of five, of which the American Medical Association shall appoint a member of that body to act as President of the council; that the Surgeon-General of the Army and the Surgeon-General of the Navy shall be invited

each to nominate one member, and the American Pharmaceutical Association to nominate two members of that council. That is, in my opinion, the second important proposition, and all others are of far less importance; these two propositions differ so entirely from the manner in which the "Pharmacopœia" has been heretofore revised, that, if adopted, there would certainly be a very great and radical change. It should be remembered that the "Pharmacopœia" was revised by delegates appointed by the incorporated medical societies and colleges and by the colleges of pharmacy of the United States. These delegates met every ten years, and in the interval each one of these bodies was expected to have subjected the "Pharmacopœia" to a preliminary revision. The results of theses labors were taken to Washington, where a general plan for the final revision was agreed upon, resulting in the appointment of a committee, to whom the preliminary revisions by the different societies were referred

If the American Medical Association take charge and become the proprietors of the "Pharmacopœia," as proposed by Dr. Squibb, it will be optional with them whether or not they will adhere to the second proposition laid out by him, to call in the aid of the medical staffs of the Army and Navy, and of the pharmacists; for then, of course, they may constitute the council as they please, and change the mode of revision at will. That appears to me to be a very serious objection to Dr. Squibb's plan. Another objection lies in the fact that the American Medical Association is, like the American Pharmaceutical Association, an unincorporated body; whilst the delegates to the Decennial Convention in Washington were admitted only from incorporated bodies. I do not know how far the representation of the medical colleges goes in the American Medical Association, but surely pharmacists have no voice there, and could do nothing to prevent the Medical Association from changing the mode of revision at any time, and from appointing the council in an entirely different manner from that recently proposed.

While I freely admit that many of the minor propositions of Dr. Squibb are eminently proper, I believe that those two points are essentially wrong. In connection with the last one, there is yet what appears to me an important consideration, namely, that this council of five men must be necessarily appointed from contiguous localities, and that it cannot be expected that they should be familiar with the wants of the entire country; and to rely upon what is published in the journals as to what should be changed or admitted or dismissed from the "Pharmacopœia" is entirely insufficient. Such information should come from bodies who have a direct interest in the matter.

The President. There are several friends present this afternoon, not immediately connected with the College, and it is hoped they may feel entirely free to unite in the discussion as freely as the members of the College, or any person interested who may not have been specially invited.

Mr. A. B. Taylor. Mr. President: Some time since I received from Dr. E. R. Squibb, a pamphlet, and commenced writing a brief review of that pamphlet. That was previous to the calling of this meeting. On hearing that this meeting was called, I thought it would be perhaps a good place to ventilate this subject.

On motion of Prof. Remington, Mr. Taylor was requested to read his review. The paper is published on page 209.

PROF. REMINGTON. Does Mr. Taylor present that to the College?

MR. TAYLOR. Yes.

PROF. REMINGTON. Then I move that it be referred to the Publishing Committee.

The motion was passed.

DR. H. C. WOOD. I think it was the Apostle Paul who once said that he would not go to a certain people, for though terrible in letter he would not be much in person. I will not encroach upon your time further than to state what the College of Physicians have done. They have passed a series of resolutions, preceded by a preamble, in which it is stated that they take this method of expressing themselves, for they are not entitled to representation in the American Medical Association, though entitled to representation in the National Convention. They are simply resolutions of protest against the American Medical Association taking the action proposed. I think it is allowable to state that in a letter from Dr. John C. Riley, of Washington, upon whom will devolve the duty of calling the next Decennial Convention, he states that he cannot see but that he is in honor bound to call the convention in 1880; so it seems there is no doubt but that the convention will be called; and I think the whole movement of the American Medical Association will turn out a failure.

THE PRESIDENT. Mr. Taylor's paper so completely covered the ground that I presume there is little further to say.

PROF. MAISCH. When I first heard of Dr. Squibb's views in regard to the change, it occurred to me at that time, that it was rather better for individuals not to publicly express their views, but that that should be left to those bodies whose delegates are to assemble in the Decennial Convention. It is for that reason that I, as one, have never spoken about it publicly, either in the Pharmaceutical Association or in the "American Journal of Pharmacy." But it has been my intention to bring it before this College, which College has had a hand in the revision for the past forty years, and, I believe, should speak out its views in regard to the proposed change. I do not know that those views could be arrived at in any other way than by calling a meeting and by presenting resolutions. I would therefore move, that a committee of, say three, be appointed to report a series of resolutions for the action of this College. In the meantime the other members may discuss the subject further.

The motion was passed, and the President appointed Prof. Maisch as Chairman, who nominated Mr. Taylor, who nominated Mr. Bullock, and the three members thus named were confirmed by the meeting, and withdrew.

DR. CHARLES H. THOMAS. I would like to inquire in regard to the appointment of this committee what the scope of their power is; the words of Prof. Maisch's resolution are not distinct in my mind; whether the resolutions which they are instructed to prepare are intended as an answer to Dr. Squibb only, merely negative as far as the propositions advanced by him are concerned; or whether they really prospose to go to the root of the matter, and to take up and give us some ground to form an opinion as to the right procedure in relation to certain forms. I infer that it was going rather to the point of negation to Dr. Squibb's resolution.

PROF. REMINGTON. I know, somewhat, the views of the gentlemen who are on the committee. Of course I cannot say exactly what sort of resolutions they are going to bring in; but the opinion I have heard expressed, is that the idea of Dr. Squibb putting this revision of the "Pharmacopœia" into the charge of the American Medical Association was not one which would be fraught with success, as to the producing of a good boook, and that they believe, and I suppose a majority of the members here believe, that the same reforms which Dr. Squibb has spoken of in his pamphlet can be brought about by the National Convention appointed for that purpose, which will embrace delegates from a wider range than can be taken in by the American Medical Association; and that Dr. Squibb has foreshadowed many excellent reforms. But the principal point of difference is that he is wrong in referring the whole matter to the American Medical Association, and giving them the charge of it; that what can be done, can be done better by a special convention for that purpose; that while the previous conventions have not produced a perfect work—that must be admitted—I do not go as far as Mr. Taylor in his remarks, that the "Pharmacopœia" cannot thus be made; but I think we can assume that a convention appointed for the purpose can do all the work that the American Medical Association can do, and more too.

DR. THOMAS. I am sure that I agree with Prof. Remington's idea, that the Pharmacopœial Convention is the proper authority for the proper revision of the "Pharmacopœia." That furnishes the ground for a few words in regard to the future revision of the "Pharmacopœia." I was a member of the last convention at the last decennial revision, and I well remember the interest I took in a proposition which was made, and resolution passed, instructing the Executive Committee to have liquids presented in weight, throwing out measures of capacity. Mr. Taylor made a slight reference to it in his paper. He used the words: "derelict on the part of that committee." I remark a pamphlet of Dr. Squibb's, in which he severely handled this committee for disregarding this resolution of the convention, from which they received their only authority to do the work at all. They threw out this resolution itself, and stated, in the preface to the Pharmacopœia, that they felt they had sufficient reason for doing so, and were willing to take the responsibility for this, and said that the change would not pay for the trouble expended in the matter.

This brings me to the further point which I think it would be well to take into consideration, for I think this proposition of Dr. Squibb's is broad-reaching in its action. One reform which I think we ought to bring into the "United States Pharmacopœia" is the idea which is the foundation of several European Pharmacopœias. My attention was called to this some three years since by Prof. Maisch. I was interested in an article published in the "American Journal of Pharmacy," in July, 1874. The idea is one that renders a universal Pharmacopœia possible, and that is arranging for weights Weigh all substances in compounding, not by specific weight, but in parts by weight, so many parts of this and so many parts of that, rather than any particular amount. That is the idea that underlies the Pharmacopœias of Germany, Scandinavia and some others. As I examined the German Pharmacopœia I believe it should be taken as a model, and ought to be care-

fully observed in all future revisions of our Pharmacopœia. And if in these times of considerable heat—and there will probably be a lively discussion in the Medical Association at its next meeting—if this College could send some positive recommendation in regard to the revision of the "Pharmacopœia," and take into account the method adopted in the German Pharmacopœia (six or eight were obliterated in making this grand Pharmacopœia); if this College can give the American Medical Association a suggestion of the Pharmacopœia, which shall be assimilated to the German, and lay the foundation for an easy approach to the foundation of a universal Pharmacopœia, it will have done a very valuable work for the Medical Association and for this College; for it would be for their mutual interests.

Prof. P. W. Bedford, New York. At the meeting of the American Pharmaceutical Association, held in this building last summer, the subject was brought up by Dr. Squibb, who offered a series of resolutions which were preceded by a resolution, that the "American Pharmaceutical Association devote an hour of its third session for the discussion of its interests in the pharmacopœia, with a view to the adoption or rejection of the following preamble and resolutions;" and then follow the preamble and resolutions in regard to the Medical Association taking the work and the Pharmaceutical Association offering its hearty co-operation, etc. When this was followed by Dr. Squibb's remarks, I think the majority of those present hardly conceived the full idea that he was making known. It became evident to those present that it was intended to be brought up in the afternoon for discussion and vote whether to adopt the resolutions or not. The members of the American Pharmaceutical Association Committee on Revision were present, and concluded that it was hardly the fair way to get at it, and they prepared another set of resolutions, which are on record in the proceedings, and were intended to be non-committal.

After the discussion had been gone into for some time, Dr. Squibb said that this was not intended for adoption, but merely for discussion. At the time the resolution was not particularly re-read, and after the Association had heard a little more discussion, it laid the subject on the table. But after the adjournment of the meeting I read the resolution, and found that it said not only "discussion," but also "with a view to the adoption or rejection of the resolutions" which Dr. Squibb offered. The matter came up rather unexpectedly, and it provoked a good deal of discussion and some personality, which I was sorry to hear.

The question at issue is, shall the Medical Association control the revision of the "Pharmacopœia" or not? Our Colleges of Pharmacy are representative bodies, and interested in this work; and availing myself of your invitation to take part in these proceedings, I think the views of outsiders may not be entirely uninteresting. Shall this College, or any college, permit itself to acquiesce in any proceeding resulting in identifying itself with the Medical Association at all? The more I have looked into the pamphlets, the more I am convinced that the whole thing is wrong. There is no method suggested by Dr. Squibb that equals in its provisions the provisions already made by the National Convention; therefore it would be entirely wrong for any of the Colleges of Pharmacy to give any adhesion whatever to this proposed plan of Dr. Squibb's. There should be a decided negative against it.

The plan which has been working can be continued, and reform accomplished there much better than in the proposed plan of Dr. Squibb.

But what I think has been peculiar is this, in regard to its introduction, which was first for adoption and, finally, for discussion only. It seems to me the matter was sprung upon us rather curiously. I think the Colleges of Pharmacy should express themselves decidedly in this matter.

The gentleman has referred to the instructions of the Convention to the committee being entirely disregarded. I had hoped to ask whether there were not some other recommendations that were not totally disregarded. I would also state, that as chairman of the Committee of Revision for the Pharmaceutical Association, I have just issued a circular to the Committee on Revision, and it will also be sent to every member of the Association, in which the resolutions of the eommittee are printed; and it is hoped that the members of the Association will most heartily render aid and assistance in carrying out the revision. And when we meet next summer there will be some practical results of the work at which we have been engaged for the past two or three years, but of which we have done but little.

PROF. REMINGTON. In regard to the question which Dr. Thomas brings up as to the matter of revising the "Pharmacopœia" formulas down to one universal plan, quantities by weight and parts by weight, doubtless at the next revision we shall not only have that reform instituted, but also the introduction of the metrical system. The recent discussions upon the advantages of the use of this system have resulted in awakening the pharmaceutical mind all over this country, as to the desirability of introducing it into the "Pharmacopœia;" and I for one cannot see how the next Committee of Revision can fail to adopt both of these reforms. This stirring up that Dr. Squibb has given us I cannot help but regard as a very good thing, for we have crept on too much in the old way. If it results in the rejection entirely of his plan, as it seems likely it will do—for all the Convention has to do is to hold its meeting at the regular time—at that time, I have no doubt, we will see a very great change in the revision.

PROF. BEDFORD. I would state one point: that last summer the recommendations of the sub-committee, composed of Mr. Balluff and myself, to approve rules for the guidance of the committee of the Pharmaceutical Association, were published in the "Druggists' Circular," and it was asserted by Dr. Squibb in the meeting that took place here, that this gave rise to the belief that the Pharmaceutical Association were revising the "Pharmacopœia;" but the peculiar point I want to bring out is, that to the invitation which was extended to pharmacists to communicate alterations and amendments to the committee, I got exactly one reply.

THOMAS S. WIEGAND. There are on the desk the reports of three different decennial preliminary revisions of the "Pharmacopœia," made by committees of this College. It will give some idea of the amount of labor that this College of Pharmacy has been in the habit of putting before the Decennial Convention for the revision of the "Pharmacopœia." Dr. Squibb says, very wisely and justly, that the profession of medicine cannot do without pharmacy in the work of revision. He knows very well what work has been done by the pharmacists; and it is in this connection, as an evidence, that I have brought before this meeting three different reports by our College, which have been to Washington and been considered by

committees of final revision; and, after having been so used, have been returned to the College to be deposited among their documents. I think they will give an adequate idea of the amount of work necessary to make a report on the subject to the Decennial Committee to act upon. Other Colleges are equally as active as ours, and all that work it would be entirely optional with this proposed committee or council to accept or reject. If any of the members feel an interest in examining that kind of work, these books will perhaps convey a better idea as to what has been done in years past than anything else. Such works cannot be made without great labor. It would be a matter of some interest if the American Medical Association were to appoint a committee to see the amount of work which the pharmacists have performed. No medical association appoints a committee to go over the ground and prepare work; and if the apothecaries have undue weight there, I can see how they are entitled to it, for the reason of their having done vastly more work.

PROF. ROBERT BRIDGES. Mr. Wiegand is mistaken on one point, in saying that no medical colleges have undertaken such a work as this. The College of Physicians has always appointed a committee two years before, who has thoroughly prepared a report, and sent it. I am sorry to say not many medical societies have done the same.

MR. E. M. BORING. The labor of the pharmacists shown us by Mr. Wiegand, that Dr. Squibb proposes to have paid for, was a labor of love from this College.

The Committee on Resolutions, Prof. Maisch, chairman, made a report, which, after some verbal alterations, was read, as follows:

Resolved, That the Philadelphia College of Pharmacy does earnestly deprecate and object to the proposed transfer of authority for revising the "United States Pharmacopœia" from the National Pharmacopœial Convention, as proposed by Dr. E. R. Squibb, believing that any such transfer would be subversive of the best interests both of the medical and pharmaceutical professions, and that the nearest approach to a national character in the work will be that derived from the convention now specially provided for the purpose.

Resolved, That the Secretary of this College be directed to forward a copy of these resolutions to the President of the American Medical Association, to be laid before that body.

On motion of Prof. Remington, the resolutions were passed unanimously.

PROF. MAISCH. I desire to say a few words in regard to the manner in which our Pharmacopœia has been gotten up. The history of the establishment of our National Pharmacopœia is a peculiar one, and shows that the pharmacists have had an interest in it from the beginning of the establishment of pharmaceutical societies. The first "Pharmacopœia" appeared in 1820, previous to which time the subject attracted the attention of the New York County Medical Society, where Dr. Lyman Spaulding submitted a series of resolutions, including a plan which divided the United States into four sections, and proposed that in each section the incorporated medical societies should form a pharmacopœia, and these four pharmacopœias should be merged together by a National Convention. It appears, however, that in those four districts only one convention was held, at Washington, and from that resulted the first pharmacopœia. At that time there was no pharmaceutical society in existence in the United States. The Philadelphia College was established in 1821, a year after the first "Pharmacopœia of the United States of America" was issued. In 1820, the President of the Convention received authority to call,

after ten years, a convention of all incorporated medical societies and colleges, and in the original plan delegates from volunteer associations were included. When the second convention was called, of course a call could not be issued including the pharmaceutical societies, the first one of which was established over a year after the convention had been held.

In 1830, however, I find in the historical introduction to that "Pharmacopœia" the following: "In accordance with the powers granted them, the Committee on Publication submitted an amended draft to the Philadelphia College of Pharmacy, by whom, after a careful review, a resolution was adopted approving of the work, and recommending the members of the College to use the work" It is plain from this, that, as soon as the National Convention saw an opportunity of inviting the co-operation of the pharmaceutical bodies it was done, and that, secondly, the "United States Pharmacopœia" is owned by right as much by the representatives of the American pharmaceutical societies as by the American medical societies; in other words, it is joint ownership of the two branches.

In 1840 there was again formal authority conferred upon the Committee of Revision "to request the co-operation of the Colleges of Pharmacy of the United States." And then it was that the President of the Convention was directed to issue, in 1849, the call including the Colleges of Pharmacy in the United States. The co-operation of the Colleges of Pharmacy was sought in 1830 and 1840, but in 1850 a formal invitation was given to take part in the Convention.

Prof. Bedford. The physicians of New York, it appears to me, do not entertain a very favorable idea of this plan of Dr. Squibb; there is a call out for the 23d inst., for the New York County Medical Society, to discuss this same proposition. So far as I know, amongst the medical profession and the members of that society, they do not favor this going to the Medical Association, but think it should follow the course heretofore taken.

On motion of Professor Remington, the meeting adjourned.

William J Jenks, Secretary.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

American Pharmaceutical Association.—The Committee on Prize Essays have made the following report:

The undersigned committee, having carefully examined the papers presented at the meeting of the American Pharmaceutical Association, held at Philadelphia in September last, and printed in the proceedings, have arrived at the decision that none of the essays offered comes fully within the terms of the stipulations made by the donor, restricting the award "to the best essay or written contribution containing an *original* investigation of a medicinal substance, determining new properties or containing other meritorious contributions to knowledge, or for improved methods of determined merit for the preparation of chemical or pharmacal products."

In view of the apparent difficulty of obtaining, by the present method, original communications of sufficient importance and merit to justify the awarding of a prize, the committee would respectfully suggest the following modification of the present plan, which is believed to give better results, and does not conflict with any of the stipulations in the original grant:

1. The duties of the Committee on Prize Essays shall be two-fold, viz.:

a. To select from the queries proposed at any one meeting those, a satisfactory reply to which would be a valuable addition to our knowledge and be worth competing for. They shall publish these selected questions within four weeks after the annual meeting.

b. To examine and determine the merits of the answers to the queries designated as worthy to be competed for by their predecessors.

2. All answers presented with a view to compete for the prize shall be handed in anonymously, but distinguished by a motto and accompanied by a sealed envelope directed to the president, enclosing the author's name and address, and bearing on its face the same motto as the essay.

3. The committee shall determine, within eight weeks after the annual meeting, which if any of these anonymous essays may be worthy of the prize, and they shall apprise the president of their decision, who shall communicate to them the name of the author. The unsuccessful papers shall be returned to the president, who alone shall be authorized to return them to their authors on demand. The successful essay shall then be handed to the Publishing Committee.

4. Should none of the papers, expressly offered as competing for the prize, be found deserving thereof, the committee may select any other paper presented to the Association, either as answer to a query or as a volunteer essay, which they consider of sufficient merit to be entitled to the award.

Respectfully submitted,

CHARLES RICE,
GEORGE C. CLOSE,
EDW. P. NICHOLS,
Committee.

Our Canada friends are already actively engaged in making preparations for the next meeting of the American Pharmaceutical Association, which is to be held in the city of Toronto in September next. The attractiveness of Niagara Falls will doubtless induce many members to spend there a day or two previous to the meeting, and a large attendance is expected at the opening session.

National College of Pharmacy, Washington, D. C.—The annual meeting was held April 3d, 1877, President R. B. Ferguson in the chair. The minutes of the last annual meeting, of the special meetings and meetings of the Board of Trustees held during the year were read and approved. The reports of the various standing committees, which were quite voluminous, occupied much time in reading; the suggestions contained therein were referred to the next Board of Trustees.

The retiring President delivered his annual address, which was replete with valuable suggestions. The College elected officers for the ensuing year, as follows: John A. Milburn, President; Jas. D. O'Donnell and Giles G. C. Simms, Vice Presidents; John C. Fill, Secretary; W. G. Duckett, Treasurer; H. E. Kalussowski, Librarian and Curator; W. S. Thompson, Chas. Becker, J. W. Drew, R. B. Ferguson, W. F. Scala, Chas. F. Moore, Trustees. The usual Standing Committees were appointed, after which the College adjourned.

The following gentlemen graduated at the Fifth Annual Commencement, held April 30th: T. E. Chidister, Ohio; T. G. DeMoll, D. C.; T. M. Coombs, D. C.; C. G. Dulin, D. C.; John J. Stafford, Maryland.

Georgia Pharmaceutical Association.—*Editor American Journal of Pharmacy:* As you are interested in the progress of pharmacy throughout the country, I will briefly call your attention to a lively interest displayed April 10th by the votaries of the mortar and pestle, on the occasion of the Second Annual Meeting of the Georgia Pharmaceutical Association, which met at Atlanta in the Markham House. The members present represented some of the most intelligent pharmacists of Georgia. About forty-five answered to their names.

After an address of welcome by Walter A. Taylor, Ph.G., the following officers were elected for the ensuing year: R. H. Land, President; E. W. H. Hunter, R. B. Holl and O. Butler, Vice Presidents; John Ingalls, Treasurer; Walter A. Taylor, Secretary.

Your correspondent, Mr. Shoemaker, of Philadelphia, and Mr. Cheatham, of New York, were cordially invited to seats in the meeting. President Hunt, of Macon, delivered his annual address, which was full of interest. T. A. Cheatham, Ph.G., the orator of the day, opened the afternoon session with a splendid essay, principally devoted to the disreputable practice of the extensive use of the various nostrums and patent medicines of the day, and urged the educational standard of the pharmacist as a remedy for the evil. Mr. Schumann also read a paper on the same subject. Several other papers, answers to queries given last year, were read, and for the coming session many queries upon subjects in pharmacy were read and accepted readily by the members, each showing a lively interest in the work begun a short time ago by a few. Steps were taken by the Association to have a change in pharmacy and poison laws. After the chair had appointed three delegates to the American Pharmaceutical Association, the meeting adjourned, to meet in Augusta on the second Tuesday in April next. At night the druggists of Atlanta had a long table in the Markham House loaded down with the good things of this life for the inner man, and right well their guests appreciated it. Humerous toasts and jolly good feeling prevailed, and at 12 o'clock all decided that they had had enough of a "good thing," and left with pleasant recollections and a stimulated interest in the progress of pharmacy. As a visitor, I can say that Georgians have gone at the work in good earnest, and I thank them for their many courtesies. W. B. ADDINGTON.

Cincinnati College of Pharmacy.—The Commencement Exercises were held on the evening of the 21st of March, at College Hall, and were opened with prayer, after which the President, Dr. R. M. Byrnes, conferred the degree of Graduate in Pharmacy upon the following gentlemen: Chas. A. Doerr, Wm. Feemster, Gus. A. Fieber, J. A. Horsnyder, Donn. W. Light, J. H. Linneman, J. C. Otis, Chilton S. Porter, Louis Reinert, Jr., F. E. Schmuck, Chas. Sofge, R. C. Wangler, Herman Wilfert. The address on behalf of the Board of Trustees was delivered by Prof. T. A. Reamy, who spoke of the usefulness of the College and explained the important part pharmacists are expected to perform in life. The following prizes were distributed: Prof. Judge's Chemistry prize (complete set of blow-pipe apparatus) to Chilton S. Porter; Prof. Wayne's Materia Medica and Botany medal to John H. Linneman; Prof. Fennel's Pharmacy prize (elegant prescription desk-balance) to G. A. Fieber; the Alumni medal, for general proficiency, to Chas. A. Doerr. The graduating class presented to the College a collection of valuable books, Mr. Chilton S. Porter making the presentation speech, and Dr. R. M. Byrnes, as chairman of the Board of Trustees, appropriately responding. Prof. Judge next addressed the audience in his usual good style, and was followed by Mr. J. C. Otis of the graduating class, in the Valedictory. After the exercises the Alumni Association entertained the new graduates, the Faculty, Board of Trustees and a host of friends at their annual banquet, spread at the Gibson House.

EDITORIAL DEPARTMENT.

State Pharmaceutical Societies.—In the present number we publish a brief account of the meeting of a State Pharmaceutical Society in the Southern section of our country, Georgia, and have occasion to note the prompt publication of the transactions at the recently-held meeting of a State Pharmaceutical Society in the Eastern part, Connecticut. Neither of these associations has been in existence much over a year, but both appear to be vigorous and full of energy, and it is a pleasure to note that in this respect they follow in the wake of nearly all their older sister organizations, none of which has as yet attained a riper age than eight years. There are now in existence State pharmaceutical associations in California, Connecticut, Georgia, Kansas, Maine, Michigan, New Hampshire, New Jersey, Rhode Island, South Carolina, Tennessee and Vermont, twelve altogether, and with the exception of one or two, which seem to be affected by the hard times, all are prospering, and the majority have had important trusts confided to them by the Legislatures of their respective States. Aside from the Colleges of Pharmacy and the Associations of its Alumni, we have a number of local societies, embracing certain cities or counties, in which meetings for scientific and social intercourse are regularly kept up.

It seems strange that similar organizations have as yet not been formed in any one of the most populous States; in fact, the territory in which no State pharmaceutical association is in existence, forms an almost unbroken belt from New York to North Carolina in the east, and westward to the great valley of the Mississippi and Missouri, not taking into consideration the thinly populated States farther West. What may be the cause of this? It certainly cannot be that there is less occasion for the union of pharmacists there than in the States enumerated above; it is not that they are less intelligent, or care less for social and scientific intercourse; but, most likely, it finds its explanation in the fact that the pharmacist and druggist is so much confined to his business, that he has little inclination to cultivate the acquaintance and friendship of others, more particularly of those who, to some extent, may be considered his rivals in business. And still the old adage, familiar to all, "All work, and no play," etc., is peculiarly applicable to the members of our profession. Those who have attended the annual gatherings of the migratory American Pharmaceutical Association all speak with pleasure of the pleasant intercourse between its members, and of the healthful recreation incidental to the respite from business cares, and notwithstanding the labors connected with the meetings. The same would be the result of the meetings of State societies; they could not meet oftener than once or twice a year, and if a suitable time be chosen, they could, and doubtless would, be well attended. Such meetings would probably be hardly ever prolonged beyond a day, and the territorial limits and railway facilities are in nearly all the States such as to admit of such a meeting with but little expenditure of time and money—an argument which has been well advanced by Mr. Dikeman, of Connecticut, in his late presidential address.

And how is the object to be consummated? We would suggest that the drug-

gists and pharmacists of the different State capitals issue a call for a meeting to take place early during the coming summer, and we have no doubt that a respectable number would respond to place each association on a firm footing at the very start. The State capitals, without exception, are easy of access, and in all suitable provisions for a successful initiatory meeting could be made. Will our pharmacists move in the matter?

Medical and Pharmaceutical Ethics.—The physicians and pharmacists of Antwerp have recently set an example which deserves to be emulated also in many sections of this country; if carried out in good faith by all concerned, it cannot but promote the friendly intercourse between the members of the two professions, and abate almost altogether that feeling of antagonism which is still too frequently manifested, and which, while it demands for one side the unconditional recognition and the most liberal interpretation of its acquired or supposed rights, is often but too much disposed to curtail those of the other side, or to overlook the fact that during the past century the medical and pharmaceutical sciences have progressed to such an extent as to render their complete and co-ordinate separation absolutely necessary. It cannot but be productive of good to know in what manner the amicable adjustment of such differences is attempted and, let us hope, accomplished elsewhere.

A mixed committee, consisting of three physicians and three pharmacists, appointed by the respective professions of Antwerp, has elaborated the following project, which will doubtless receive the sanction of both parties:

1. Each member of the two branches of the medical corps should abstain from interfering with the prerogatives of the other; the physician should not furnish any medicine to his patients, and the pharmacist should avoid giving medical advice; the pharmacists may, within the limits of the law, furnish medicines which may be asked for, such as a cough mixture, a sedative draught (potion calmante), a purgative, copaiba capsules, etc., without, however, advising that such or another preparation was more suitable.

2. The physician and pharmacist should conduct themselves towards each other with the sentiments of kindness (bienveillance) and confraternity, which unite the members of a family, and should avoid, in the presence of the client, every kind of reflection or unfair remarks (appréciation désobligeante); a conciliatory council should be appointed for smoothing such disputes as may arise on the subject of medical practice.

3 Finally, physicians should as rarely as possible prescribe secret remedies and pharmaceutical specialties; on the other hand, pharmacists should abstain from advertising them.

Similar resolutions, concerning the intercourse between physicians and pharmacists, have been adopted by the professions in other cities of Belgium.

Warburg's Tincture.—Recently we have been applied to for a formula for this tincture, which had been mentioned in some medical journals as a valuable febri-

fuge; supposing it to be a new preparation, we inquired among a number of our friends, to all of whom the preparation was unknown. A lengthy leading article of the "Medical Press and Circular" (Dublin), of Feb. 21, contains a fuller account of Dr. Broadbent's paper, published in the "Practitioner," and for the benefit of our readers we make a few extracts, which are of pharmaceutical interest:

Warburg's tincture has long held a high reputation in India as a remedy of "undoubted and, indeed, unequaled power" in the treatment of the malignant malarial fevers of that country and of cholera. For a long time it was a secret remedy, but in 1875 Prof. McLean made known its composition, and gave his unqualified support to all that had been said in its favor.

The ingredients of this compound are very numerous, and in this respect its composition reminds us of the complex formulæ to be found in our old dispensatories—such, for instance, as the once celebrated Theriaca Andromachi, or the still more celebrated Mithridate. It consists of aloes, rhubarb, saffron, fennel, gentian, cubebs, myrrh, camphor, zedoary root, enula and angelica seeds. It also contains the confection "Damocratis," consisting of innumerable aromatic substances, and which was officinal in the "London Pharmaeopœia" of 1746. Prepared chalk, which was added to correct the otherwise acrid taste of the tincture; and Boletus Laricis, or larch agaric, formerly used as a drastic purgative. Its most important ingredient, however, is quinine, each ounce of the tincture containing as much as nine grains and a half of the alkaloid. The tincture is of a deep brown color, has an aromatic and slightly terebinthinate odor, and an intensely bitter and warm aromatic taste. But its spirit is not perceptible either to taste or smell and it seems (remarks Dr. Broadbent) as if the alcohol were entirely saturated and, as it were, extinguished by the substances taken up.

In reference to the large quantity of quinine the tincture contains in combination with what some might term "a farrago of inert substances," Prof McLean observes that he has treated remittent fevers of every degree of severity, in various parts of India and China, but he has never seen quinine, when given alone, act in the manner characteristic of this tincture. He has never seen a single dose of nine grains and a half suffice to arrest an exacerbation of remittent fever, much less prevent its recurrence; while nothing is more common than to see the same quantity of the alkaloid in Warburg's tincture bring about similar results.

Dr. Broadbent is disposed to attribute the extraordinary virtues of this tincture to three therapeutical principles, namely, the combination of quinine with powerful aromatics, the highly concentrated state of the tincture, and the powerful impression made by it upon the nervous system.

The formula for this tincture, as given in the "Med. Times and Gazette," Nov. 3, 1875,[1] by Prof. McLean, apparently upon the authority of Dr. Warburg himself, is as follows: Socotrine aloes, ℔i; rhubarb, angelica fruit, confection of Damocrates (containing 40 to 50 ingredients), of each ℥iv; elecampane, saffron, fennel, prepared chalk, of each ℥ii; gentian, zedoary, cubebs, myrrh, camphor, agaric, of each ℥i. Digest the whole with 500 oz. proof spirit, in a water-bath, for 12 hours; express, add 10 oz. sulphate of quinia, dissolve by the aid of a water-bath, cool and filter.

On referring to "Dorvault's l'Officine," 1872, p. 934, we find the following statement concerning the *teinture fébrifuge de Warburg:*

"It is supposed to have the following composition: Hepatic aloes 4 grams, zedoary 4 grams, angelica root 0·1 gram, camphor 0·1 gram, saffron 0·15 gram, alcohol 100 grams. Digest, filter, and dissolve in the filtrate sulphate of quinia 2 grams. Dose, 20 grams a day. According to some authors, the base of Warburg's tincture is *picrolichenin*, the principle obtained from several species of Variolaria; but Dr. van den Corput and several other chemists have positively found quinia in it."

Hager's "Manuale Pharmaceuticum" gives the following formula for *tinctura antifebrilis Warburgii:* Elixir proprietatis 22 parts, alcohol 16 parts, spirit of camphor 2 parts, and sulphate of quinia 1 part.

[1]See "Amer. Jour. Med. Sciences," Jan., 1876.

It is apparent, by comparing these formulas with the account given above, that they are simplifications of the composition as stated by Prof. McLean. In regard to the imperceptibility of the alcohol, however, the statement of Dr. Broadbent appears to require some qualification; for Wittstein, in his "Geheimmittellehre," 1876, p. 82, describes the nostrum as being "sold in vials containing not much over half an ounce (weight), and as being a dark yellowish-brown, not perfectly clear liquid, which smells of alcohol, and at the same time of camphor and saffron, and has an intensely bitter, somewhat aromatic and plainly camphoraceous taste. It contains, according to Buchner, quinia and probably, also, cinchonia, camphor, saffron; probably, also, aloes, myrrh and other aromatics like galangal; it might, therefore, be prepared by exhausting Calisaya bark with water acidulated with sulphuric acid, concentrating by evaporation, neutralizing with lime, exhausting with strong alcohol, and adding some camphor, saffron, etc."

It is further stated that "Ragsky, from his analysis, has contrived the following formula for preparing a vial of the tincture: 1 grain camphor, 2½ gr. aloes, 10 gr. orange peel, and 12 gr. elecampane are digested with ½ ounce (weight) of alcohol and 24 drops of diluted sulphuric acid; to the tincture is added 9 gr. sulphate of quinia and 3 drops of Sydenham's laudanum. Some state to have observed the presence of ginger and angelica, but these two are subordinate in quantity."

It is to be regretted that before the alleged virtues of this nostrum were heralded forth the constituents upon which they depend were not previously ascertained. Being an opponent to polypharmacy, we have no faith in "a farrago of inert substances."

The Nostrum Chlorodyne.—The March number of the "Pacific Medical and Surgical Journal" contains a forcible and well-timed editorial, which we transcribe to our pages, merely remarking that we need not travel to Great Britain to find physicians who prescribe, and medical journals who advertise, nostrums, and even "puff" them.

British physicians at home and in America are in the habit of employing the nostrum called *Chlorodyne*, asserting that its virtues are such that they would not be justified in discarding it, nostrum though it be. Various formulas have been announced for its composition, based on chemical analysis and experimental use. But its exact composition remains a matter of doubt, though for all practical purposes the proposed substitutes are doubtless as good, and some of them probably better. How far medical men who prescribe it under these circumstances violate the ethics of the profession, is a question worthy of thought. No one who does prescribe it can consistently open his lips against other nostrums, or the nostrum business in general; for other practitioners have the same right as themselves to use and endorse such other nostrums as they may conceive to be useful. And so professional men succeed in countenancing and upholding the entire abomination. Like Cowper's Mahometans over the interdicted swine, some choosing the snout and some the tail as parts exempt from prohibition,

"From tail to snout the hog is eaten."

There is not in the long catalogue of quack medicines, any other one that has so linked the profession with quackery as chlorodyne. There is no stronger proof of this than the fact that one of the most prominent and best esteemed of the British medical journals promulgates in every issue an advertisement of the nostrum, with such laudations of it as the manufacturer chooses to make public. Dr. J. Collis Browne, it is stated, was the discoverer, and the formula has been confided only to J. T. Davenport, who is the sole manufacturer. We think a standard medical journal should not hire its columns in this style for the promotion of quackery. When such things are done within the family how shall we expect secular and religious periodicals to do otherwise than flood the country with all sorts of vile impostures! Under such circumstances the attempt to reform the customs of the community in this respect may well bring down upon ourselves the denunciation—Ye fools! First take the mote out of your own eye, &c.

The Milk of Sulphur Prosecutions in England, to which we have referred on a previous occasion ("Am. Jour. Pharm.," 1875, p. 138), appear to have reached the end which they deserved. As our readers are aware, the old-fashioned milk of sulphur, containing calcium sulphate, which, by the way, has never been officinal in this country, has been supplied there, whenever *milk of sulphur* was asked for, while *precipitated sulphur* meant the article which here is used under both names, namely, the sulphur precipitated from a solution of calcium sulphuret by hydrochloric acid, and consequently free from calcium sulphate. On an appeal taken from the decision of a magistrate, the Knutsford Quarter Sessions, by a very full bench, decided, without hearing all the testimony of the appellant, that in the trade and the medical profession there were two distinct substances, known as *lac sulphuris* and *sulphur præcipitatum*, and that they were supplied to the trade and the public by those names as two distinct things.

We consider this decision as eminently proper, and warranted by the facts as they appear to an entirely disinterested observer; for in the United States we regard the two terms as absolutely synonymous, and a milk of sulphur containing sulphate of calcium, as a fraud. But we know also that mere terms have a different significance with the population of different localities, and that it cannot be altered by any amount of scientific reasoning.

A Pharmaceutical Journal Discontinued.—Buchner's "Neues Repertorium für Pharmacie" has been discontinued with the close of the twenty-fifth volume, (1876). This journal, with its predecessor, has been one of the most important and influential, dating back to the year 1815, when the "Repertorium für die Pharmacie" was established by Prof A. F. Gehlen, a pharmacist, and at that time one of the best known German chemists, who had previously edited several volumes of the "Berlinisches Jahrbuch der Pharmacie." Gehlen died unexpectedly before the first volume of the "Repertorium" was finished, being poisoned by the inhalation of arseniuretted hydrogen, with which gas he was then experimenting. The very first *essai* published in that journal was written by Dr. J. A. Buchner, who, since Gehlen's death continued to edit it until the year 1851, at the close of the 110th volume, when the title was changed to that given above. Before the close of the first volume was reached, the veteran editor died, and was followed by his son, Prof. L. A. Buchner, who remained in the editorial chair until the final discontinuance of the "Neues Repertorium."

Within a few years the publication of four important pharmaceutical journals of Germany has been stopped, namely, the "Apotheker," Wittstein's "Vierteljahresschrift," "Neues Jahrbuch der Pharmacie," and now the "Repertorium."

Correction.—In the December (1876) number we announced the death of Henry E. St. Claire Deville. This is incorrect. It was the brother of this distinguished chemist, the well-known mineralogist and geologist, *Charles St. Claire Deville,* who died in October last.

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JUNE, 1877.

PROPOSED CHANGES IN THE U. S. PHARMACOPŒIA.

By Alfred B. Taylor.

In considering the expediency of making some alterations in the plan of the Pharmacopœia, the criticisms and suggestions offered by Dr. Squibb in his published pamphlet demand the first attention.

I. Commencing with the *process* of its revision, it is admitted that the organic body charged with its control can best discharge its function through the agency of a subordinate executive commission; and the proposed "council of five" (pp. 13, 25 and 40 of pamphlet) does not differ essentially from the existing "committee of revision," excepting in size. That so important a standard should, in its perfected form, represent the combined knowledge and wisdom of a larger number than five will, it is thought, be generally admitted, and in this respect the suggested change cannot be regarded as an improvement. It is acknowledged by Dr. Squibb that "no council of five men could embrace all the knowledge necessary to the formation of the Pharmacopœia;" (p. 29.) but it is urged that "it might embrace all the knowledge necessary to obtain the services of men who could do the work, and to direct, check and guard the results." How much better it must be, however, for the commission itself to be able to do this work. "How many are necessary to give that diversity of character, of knowledge and of experience and taste, whose average makes up sound judgment. No such result can be expected from a very small body, because it cannot contain the elements necessary; while in large bodies the difficulties of harmonious agreement and action, increased by the difficulties of securing prompt attendance at meetings, overbalance the advantages of greater aggregate ability." (p. 47.) If

practically there has been difficulty in securing the attendance and co-operation of a large number of active workers in the committee, this should be remedied by a careful selection by the Convention of those both qualified and willing to serve faithfully on this responsible work.

Such a commission, "charged with the entire work, should be authorized to employ one or two editors or secretaries ; perhaps two during the general revisions and one permanently. These should be experts, competent to do all the detail work under the direction of the council, and should submit the prepared work at the meetings of the council. These officers of the council should be liberally paid for their services, but should have no vote in the council, and perhaps one of them should be permanently employed, entirely and solely in the interest of the Pharmacopœia, under the absolute direction and control of the council. There should be no salaries paid to the council ; but actual traveling expenses should be paid. And all expert labor necessary to the work should be liberally paid, and the best experts only should be employed." (p. 9.)

To these propositions no reasonable objections could be made. The sacrifice of time required by the members of the commission, in their frequent and prolonged labors, is a sufficiently onerous tax, without entailing upon those living at a distance from the place of session the pecuniary outlay which few could well afford. Most heartily, therefore, do we approve the plan that "actual traveling expenses should be paid" to all members of the revising committee, in order to secure as wide a *geographical* representation as possible.

In the further elaboration of his scheme, however, Dr. Squibb arrived at the judgment that "the labor involved in bringing the Pharmacopœia up to the level of pharmaceutical progress at the times for its revision has always been great, and increasing rapidly with each revision, has now become very great, far too great to be required or expected from any committee of revision acting voluntarily and gratuitously, while no adequate provision has ever been made for paying for the labor involved." (p. 11.) If to this be opposed the testimony "that the plan of revising the Pharmacopœia by this Convention has been eminently successful and sufficient up to 1850 or 1860 will not be doubted by any reasonable person, for the testimony of the great mass of the profession will be heartily, promptly and thankfully

accorded to this proposition;" (p. 33.) the writer labors as unaptly, as ungraciously to maintain the curious thesis that the able and distinguished men who so conscientiously and industriously served on the earlier Committees of Revision did not contribute their voluntary and unpaid toil, as has generally been supposed, but that they did their work well only because indirectly they were well paid!

"When the work was mainly and so admirably done by Drs. Wood and Bache in the past, it was well and amply paid for by the *subordination* [!] of the Pharmacopœia to the Dispensatory of these authors, which latter as a private book of its authors has been deservedly one of the most popular, most useful and most lucrative books of the age." (p. 11.) And this Dispensatory "overshadowed as well as embraced the Pharmacopœia, so that comparatively few persons knew of the existence of the latter as a separate and as the authoritative book. Hence the success of the Pharmacopœia depended on its trustworthiness and utility to the profession, and these qualities were only realized through the Dispensatory and its authors; and they, by the pecuniary success of their books were well paid for their labors on both books!" (p. 33.)

This is surely an extraordinary allegation to sustain a theory. The Pharmacopœia was "eminently successful and sufficient up to 1850 or 1860," *because* two of its laborious revisers "subordinated" it to a Dispensatory! "Its trustworthiness and utility to the profession" were secured by its being comparatively unknown and "overshadowed" by the "private book of its authors"! Well may it be said that the incoherence of logic in these remarkable utterances is equaled only by the inaccuracy of their assumptions. What possible meaning can be attached to the phrase "the subordination of the Pharmacopœia to the Dispensatory"? And in what possible way could the "admirable" work on the former be "amply paid for" by such subordination? Has some ingenious prestigiation been successful—at the same time—in "admirably doing" the Pharmacopœia and in leaving it helpless and undone? Such would seem to be the inevitable implication. Referring to the first appearance of the Dispensatory as a commentary on the Pharmacopœia of 1830, our author says: "From that time the Pharmacopœia became a mere skeleton or outline of the materia medica, and was of so little use without the Dispensatory—while this latter embraced its text with very much other

valuable matter—that it had no sale or demand, while the Dispensatory, based upon it, became one of the most successful medical books ever published. So completely did it overshadow and in effect suppress the Pharmacopœia that, until within the last ten years, very few in either the medical or pharmaceutical professions knew of its existence separate from the Dispensatory." (p. 16.) The language at the commencement of this passage is noteworthy: "From that time—*became* a mere skeleton!"

Such is Dr. Squibb's estimate of a "plan which has *worked well* for more than fifty years!" (p. 4) "Up to 1860 inclusive, it was accepted as the best attainable authority!" (p 39) The Pharmacopœia revision has been "so *admirably* done by Drs. Wood and Bache in the past," (p. 11.) that under the fostering care of these two eminent physicians it "became a mere skeleton"! and was "in effect suppressed"! In what more favored regions of the earth, beneath what fairer and more genial skies, under what more faithful tendance and careful nurture by the learned medical profession will Dr. Squibb seek to find a Pharmacopœia endowed with a healthier life or developed with a fleshier fulness?

It needs not the sentiment of personal respect and admiration for these two honored names (so strangely misconceived) to call forth a vindication of their labors and their influence. Can any unbiased mind suppose that the far-famed Drs. Wood and Bache "were indirectly well paid for their labor by this plan of making a Pharmacopœia which should require a Dispensatory, and then making a Dispensatory as a private and profitable enterprise, whose success depended on its being still more profitable to those who bought and used it than to its authors"? (p. 12.) With what shadow of propriety — with what pretence of plausibility—can it be affirmed or intimated that the Dispensatory would have been *less* valuable, *less* popular, *less* profitable—if the Pharmacopœia had been badly revised, or if the edition of 1820 had never been revised at all? How can that which earned success by "being still more profitable to those who bought and used it," by any possibility have rewarded its authors for labor *otherwise* bestowed?

As an humble member of the Revision Committee of 1860, it was the writer's fortune to be an intimate witness of the laborious care and the critical acumen with which these earnest Nestors of their profession applied themselves to their prolonged and wearisome duties, intent

only to secure for their cherished work the excellences of foreign Pharmacopœias and to exclude their defects. How far their scrupulous labors were successful, it is refreshing to learn from the unquestionable evidence of one whom no schemes of reformation had bewildered. In his elaborate report on this work, presented to the American Pharmaceutical Association in 1869, Dr. Squibb has offered his unsuspected testimony "that as it stands to-day it is equal with any Pharmacopœia of the world. . . . . . Its merits have spoken for themselves, and it neither needs nor admits of laudation, if we have a proper respect for its dignity and authority." [1]

To the illustrious authors of the *Dispensatory*, however, the professions of medicine and of pharmacy owe an additional debt, but poorly paid by any emoluments derived from their justly celebrated work. Especially to its influence is largely due the elevation of Pharmacy in this country to the scientific standing of a profession.

It is unquestionably true, therefore, that "this work of revision has always been done gratuitously." (p. 4.) And a "plan which has worked well for more than fifty years is entitled to so much respect that it becomes a matter of grave doubt as to whether it can be wisely disturbed." (p. 4.)

It is maintained, however, that the success of the Pharmacopœia "has depended less on the plan than on the men who originated it and carried it out." We believe, on the contrary, that its success has depended mainly on the excellence of its plan; and we further venture the opinion that a commission of ordinarily good ability, and of ordinarily good training, if large enough "to give that diversity of character, of knowledge, and of experience whose average makes up sound judgment," will, in the execution of a judicious plan, produce a much more valuable standard for professional guidance, than a council of exceptional talent and knowledge can do on any imperfect or inadequate system.

Notwithstanding that the last revision (of 1870) has, in Dr. Squibb's fancy, "lost so much ground as to make some movement of reform imperative," (p. 39.) he charitably concludes that "the present Pharmacopœia is as good as could be justly expected, and that its defects may be in a great measure chargeable to an attempt to get important

[1] Proceedings American Pharmaceutical Association, 1869, vol. xvii, p. 348.

labor, which but few have the knowledge and skill to render, without paying for it." (p. 11.) "The last committee of final revision . . had the necessary ability, but they did not give the necessary labor to the work, or at least the work as done leads directly to this conclusion." (p. 34.)[1] Therefore, difficult as it would be, "with all the caution that could be used" to organize the council of five, the hope is expressed that it "might not be impracticable if the labor could be paid for in reputation *and in money*, as it should and must be to be successful." (p. 14.) And one reason given for limiting the council to five is that "it is doubtful whether the income could ever be made sufficient to adequately pay for more than one competent editor to do the continuous detail work, and five members or councillors for the intermittent duties." (p. 15.) "Each member should be paid, from the first, his actual expenses of attending such meetings, and as the income should increase, be paid for his services, over and above his expenses, at say so much for each meeting attended. The income from the work of such a council would in two or three years adjust itself." (p. 25.)

From all these conclusions we must entirely dissent. We believe that the experiment of complicating existing jealousies with the personal struggles stimulated by greed of gain, would be fraught with evil only, and would not be likely to improve the national standard of the materia medica. To permit the copyright of such a publication to be in the absolute ownership of the compilers—as a commercial speculation—for their own emolument and recompense, with the tempting field of profitable advertising spaces so accessible, would, in our judgment, be productive of results vastly more deplorable than any "mercantile bias" of some enterprising pharmacist of the future, eager to impose his preparations on the Pharmacopœia. Hitherto the Committee of Revision can proudly say that they have had no pecuniary interest whatever in the publication. The copyright has been held as a sacred trust for the Convention, and its possible profits have been entirely devoted to cheapening the book for the public.

In this admission of the lack of speculative shrewdness thereby be-

[1] It is only necessary to say in answer to this, that the labors of this committee occupied very many sessions, often lasting late at night, with a large amount of intermediate preparatory work by the members separately, and extended over a period of twenty-four months.

trayed, we are not disposed quite so readily to accept the impeachment that from this weakness in the committee, its last revision has "lost so much ground" as to justify the so-called "reform." Let us look the matter fairly in the face. We are informed that the first four revisions of the Pharmacopœia "had no sale or demand," and that "*until* within the last ten years very few in either the medical or pharmaceutical professions knew of its existence." (p. 16.) Evidently something or somebody is at fault here! Either the critic is wrong in saying that "up to 1860, *inclusive*, it was accepted as the best attainable authority, and was received and respected as such," (p. 39.) or, we fear that the revision committe of 1870 cannot escape the charge of having maliciously caused the fifth and last edition of the work to attain "within the last ten years" a prominence so unusual, when, according to all the requirements of the situation, it should have been "losing ground!"

Another important suggestion bearing on the process or method of the work has reference to the *frequency* of the revision. "A revision of the Pharmacopœia every ten years may have been quite often enough in 1820, '30 and '40, and even in 1850, but outside of its present organization, it has since that time been generally believed that in order to keep pace with the more rapid progress of general medical science, the revisions should be more frequent." (pp. 4, 5.) "The council should make a general revision of the Pharmacopœia at least once in five years." (p. 17.) By "making a revision every five instead of ten years (subsequently perhaps even oftener than that) we should be able to keep within the covers of the Pharmacopœia nothing but what has been fully tried, fully known and fully described in detail." (p. 21.)

The project of a quinquennial Convention for Revision is believed to be a judicious one, and called for by the scientific activity of the age. A revision more frequent than twice in a decade, we do not think likely to be of advantage to either profession. We do not agree, therefore, with the suggestion that there is good reason "for supposing that a fasciculus might with advantage be issued annually or biennially, thus keeping the work up to the level of current literature and knowledge." (p. 5.) Nor are we inclined to believe that even "in the long periods of ten years many valuable articles are lost with the worthless mass of trash, not so much by the prejudice excited by the company in which they are found, as from a failure to recognize them and classify them

by proper names and description, so that they may be identified and individualized for more accurate observation and research." (p. 5.)

A Pharmacopœia, in order to maintain its dignity as a standard, should always have a character of stability. It should be as conservative as is consistent with its authority and its usefulness; adopting nothing which has not earned the well-settled approval of deliberate experience. "The long periods of ten years doubtless allow the sensational novelties of the Materia Medica to have their day, and die out without disturbing the national standard with their unsound claims and unsettled superficial testimony." (p. 5.) On the other hand, it is true that the longer the intervals of undisturbed repose, the greater the amount of detail work involved with each re-adjustment. "A more frequent review of the ground would so divide this labor and time as to give to the professions of medicine and pharmacy the results more frequently and with much less delay. And then reaching the professions more frequently and in smaller quantity, such results would be more generally examined and appreciated." (p. 5.) The meetings of the Convention should accordingly take place every five years.

The great labor hitherto thrown upon the executive committee of final revision might be very considerably lightened if the medical and pharmacal organizations throughout the country would give the Pharmacopœia a more general study, and subject it to a more intelligent criticism. It is certain that in this respect the pharmacists have shown a much more active interest than the physicians. On turning to page viii of the last edition of the Pharmacopœia, ("proceedings of the convention" of 1870), it is seen that when the delegates "were called on for such contributions as had been prepared in furtherance of the revision,"—*six* such reports or contributions were presented; two from medical bodies, to wit: the Philadelphia College of Physicians and the Missouri Medical College; and four from Colleges of Pharmacy, to wit: those of Philadelphia, Chicago, New York and Maryland. That is to say, while the medical representation in the convention was double that of the pharmacists, the latter did *at least* double the work attempted by the medicists!

Of the bodies represented in the American Medical Association, it appears that *not one* felt sufficient interest in the result to offer a suggestion or report! Comparing the rival Associations and their respective "proceedings," the contrast is equally striking. The American Phar-

maceutical Association not only has a standing Committee[1] which presents an annual Report of a very elaborate character on the "Progress of Pharmacy,"—not only has another standing Committee, annually presenting for volunteer essays, a large series of scientific "queries"—a considerable proportion of which have direct reference to details of the Pharmacopœia, but it has especially a permanent "Committee on the Pharmacopœia" which, appointed in 1863, "on motion of Dr. Squibb,"[2] and then consisting of three, was in 1874 increased to fifteen. As an offset to this, what work of a similar kind has the American Medical Association to show in its "proceedings" by which to illustrate its intelligent interest in the improvement of the Pharmacopœia, its zealous preparation for its revision, and its pre-eminent fitness to take the exclusive charge of that important work?

If the constituent bodies represented in the Convention would undertake not only to offer vague and general suggestions, but to carefully work out and present the finished details of proposed changes, they would furnish valuable contributions to the improvement and advancement of the professional Standard; would give to widely separated districts of our country their just influence and impress on the range of the work, and would materially facilitate the laborious and somewhat thankless task entrusted to the committee of final revision.

It is earnestly to be hoped that at the approaching Convention of 1880, the medical societies especially will be aroused from their previous apathy, by Dr. Squibb's energetic agitation, and redeem themselves from his reproach, "that in this organization the medical profession of eight to twelve States only was represented." (p. 6)

II. With regard to the *plan* of the Pharmacopœia, the leading objection urged by Dr. Squibb appears to be that the existing work is a "mere skeleton"—a simple dictionary of the materia medica. "As a summary of what has been said, it may be suggested that any amendment of the present plan which does not embrace a dispensatory or its equivalent in the Pharmacopœia itself, will be no improvement upon the past." (p. 13.) "I would propose to make a Pharmacopœia which should need no dispensatory; one which, for the scientific information

[1] Since 1873, this Committee has had the form of a Special Reporter, and his valuable Report on the "Progress of Pharmacy" occupied in 1874, 279 pages; in 1875, 461 pages, and in 1876, 368 pages of the published annual of "Proceedings."

[2] Proceedings Am. Pharm. Assoc.: 1863. vol. xi., p. 42.

required, would refer to the proper works where it may be found, whether it be the botanical description or the therapeutical uses, and there is no lack of books on either subject. Now let us refer to this use of the Pharmacopœia, not simply as a dictionary, but as a book which shall describe familiar drugs, or a drug as it is met with in the market, with the processes necessary for its preparation." (p. 20.) "The description, as well as the language, should be as plain as possible, and as full. Let us have a standard for the working processes as well as for the ingredients and quantities of all the established preparations." (pp. 20, 21.) Probably many would quite as strenuously insist on a full botanical description of the materia medica, or even on a brief therapeutic reference.

While there is nothing in the etymology of the word "Pharmacopœia" which would forbid such an extension of its range, it must not be forgotten that the significance of words is determined solely by established *usage*. And universal usage has limited the application of this word to a standard dictionary of the materia medica. The purpose of such a work is in no sense to furnish a manual of instruction regarding the materials employed in medicine, by the best practice of a given country; but solely to establish a desirable *uniformity* of standard in the prescription and dispensation of remedies; and as such, it is addressed to experts in the two great professions of medicine and pharmacy.

When, therefore, our critic insists that "a Pharmacopœia for the present and future should not only embrace the established materia medica, but practically the whole materia medica; it should not only be a standard of quality, composition and strength of the old, but also a standard of *knowledge* for that which is new in advancing the art of medicine;" and that it "should no longer be of the character of a catalogue, dictionary and formulary; it should aim at a clear and complete separation and identification of that grade or quality of each substance which only is to be used in medicine," (p. 43.) he is really contending that the "Pharmacopœia," properly so-called, should be abandoned, and superseded by a Pharmacology or a Dispensatory. This is undoubtedly a proper subject for inquiry and suggested improvement. But its discussion should be approached directly and legitimately.

When it is stated that "our last revision was unsuccessful . . . *because* it is so constructed as to require a Dispensatory," (p. 19.) the

inconsiderate reader is led to believe that here is a new and hapless condition of affairs—deplorable for the profession and discreditable to the revisers. In what way the Pharmacopœia of 1870 has "lost ground," or how the conclusion itself has been reached, is not revealed; and in what way either the sale of the work or its authority would have been increased by the prompt publication of an independent Dispensatory, is as little apparent.

When the reformatory critic further declares that, "In the past it seems pretty certain that . . . . . . had there been no dispensatory, a pharmacopœia upon the present plan would have been a failure," (p. 20.) he either ignores the history of all pharmacopœias in all countries, or he pronounces them all to have been "failures!" In no case has any commentary upon the materia medica been issued by the authority that has produced the pharmacopœia. Such commentaries (when they have existed) have been the work of volunteer authorship and private enterprise. A noteworthy fact in this connection is, that in the recent revision of the German Pharmacopœia, it was decided after full consideration of the subject, to retain for the work the purely titular and "skeleton" form of a dictionary, in conformity with established precedent.

Having thus effectually dissipated the fallacy as to "the *true* reason why our last revision was so unsuccessful," according to the estimate of Dr. Squibb, and "why we are *now* left to desire a change, (*if we do desire one!*" p. 19.) the field is cleared for an impartial and independent consideration of the policy of extending the scope of the Pharmacopœia; and it is now admissible to say, that if in the judgment of the Convention it is desirable to give the work a more doctrinal and popular form, no serious objection is perceived to such an enlargement of its plan and purpose. If this would be admittedly an entirely new departure, it must not be forgotten that in all professions, the people of the United States are quite as much given to *making* precedents, as to following them.

Practically there is no incongruity in a work of composite order—having in its leading paragraphs (and in distinctive type) the dogmatic character of an authoritative standard of uniformity for the materia medica, properly belonging to a Pharmacopœia; and in successive paragraphs or annotations, (in subordinate type) the didactic character of a cyclopedia of the characteristics, qualities, tests, solvents, sources,

uses, actions and doses (average, maxima and dangerous) of the materia medica, constituting it a comprehensive manual of Pharmacology. That such a work would be much more generally useful both to "Medicine" and to Pharmacy, than a mere Pharmacopœia, cannot of course admit of doubt.

Not only is it desired, however, to "embrace a dispensatory or its equivalent in the Pharmacopœia itself," without which "any amendment of the present plan . . . . will be no improvement on the past," (p. 13.) but it is proposed that the same authority which controls and revises this work, should also supply a bulletin of "knowledge for that which is new in advancing the art of medicine." To attain this end, it is held that the council should be required "to issue a fasciculus or small inexpensive volume in addition each year, giving the best attainable information in regard to new remedies and their uses, and the important elements of progress in the materia medica and pharmacy up to the time of the annual publications. . . . . Thus each fasciculus would become a useful ephemeris for its day, and these ephemerides would serve not only to keep the profession of medicine and pharmacy informed in regard to the novelties as they might occur, but assist in discriminating between the good and the bad, saving both professions from some of the influences of fashion, frivolity and mercantile speculation in medicine." (p. 14.) "The book should be simply regarded as an organized means of presenting to the professions of medicine and pharmacy a periodical summary of important and useful information upon which more accurate knowledge may accumulate in a more methodical manner in the future than in the past." (p. 45.)

Work of this kind we believe to be so entirely foreign to the legitimate province of either a Pharmacopœia or a Dispensatory, that we cannot regard the proposal with favor. When it is considered how much room for controversy exists with every novelty in medicine, the difference of opinion animated too frequently with the spirit of personal interest and "mercantile bias," it is certainly safer to leave such discussions where they properly belong, and where they can best be managed, with the able conductors of "New Remedies" and of the varied periodical literature devoted to the interests of medicine and pharmacy. As correctly stated in the Preface to the last edition of the Pharmacopœia, "Such a work must necessarily follow in the wake of advancing knowledge; it is no part of its mission to lead in the

paths of discovery; it should gather up and hoard for use what has been determined to be positive improvement, without pandering to fashion or to doubtful novelties in pharmaceutical science."

Dr. Squibb's main plea for this innovation is the value which such an "Ephemeris" or "Fasciculus"—if ably edited, would have to the physician and the apothecary. "My impression is that such a book as that, would be really more useful both to medicine and pharmacy, than the Pharmacopœia as it is. The Pharmacopœia would still be essential and indispensable, because it is the standard; but for obtaining current information, a work such as the book I have described would be more useful to physicians and to the pharmacist than the Pharmacopœia itself. From it could be obtained information quite inappropriate to a a standard Pharmacopœia." (p. 21.)

There appears to be here some confusion of idea. The "utility" of a Pharmacopœia is remote and consequential: the ultimate utility to the professions of a common and uniform standard of reference. The "utility" of practical manuals of medicine and pharmacy—recent and thorough, is immediate and absolute: the utility to individuals of a trustworthy source of progressive information and instruction. The two are entirely incommensurable. We might as well attempt to compare the relative values of a lexicon and a grammar.

The unquestionable utility, then, of such an annual *résumé* of the Progress of Pharmacy, constitutes no reason for associating this work with the Revisers of the Pharmacopœia. Rather should such a contribution furnish the extraneous material, supplied by diligent and unconnected investigators, upon which the revising tribunal is called in proper time, to sit in independent and impartial judgment. Such an annual history and epitome has for years past furnished a very considerable and valuable portion of the published "Proceedings" of the American Pharmaceutical Association. And in this body and in its congener, the American Medical Association, (its elder brother) can such "Fasciculi" be best, be most skilfully, be most appropriately gathered and bound into a sheaf. It is believed that such a work, published at cost, under the joint auspices of the two Associations, and under the inspiration of a generous emulation, would supply to the medicinal professions a Guide, fully realizing Dr. Squibb's ideal of an annual Ephemeris of Pharmacology.

The project above animadverted upon appears to be partly based

on the assumption that "the Pharmacopœia [as a work upon the materia medica] is the source of, or gives origin to pharmacy. There could be no pharmacy without a pharmacopœia, no more than there could be a practice of law without statutes or enactments . . . . Pharmacy presupposes a Pharmacopœia, but it does not make it." (p. 28.) This is evidently erroneous. No nation or people ever yet had a "statute" without having had a large body of antecedent custom and unwritten law long established. And a Pharmacopœia is no more possible without a large amount of pre-existing well-established pharmacy than is a Lexicon, without a long pre-existing spoken and written language. "A Pharmacopœia *presupposes* a Pharmacy," and is entirely moulded by it.

The only remaining recommendation of practical importance in the pamphlet under review, is that "the secondary list should be abandoned, and the separation into materia medica and preparations should give way to a single alphabetical order embracing the whole contents." (p. 57.) This technical modification of the existing plan has been repeatedly urged by various writers. It is one which we believe commends itself to a large majority of either profession. Certainly either a Pharmacopœia or a Dispensatory would be much more convenient for reference were it comprised within the alphabet of a *single* dictionary. The arrangement of all the substances in the Pharmacopœia in a single or continuous alphabetical order is also recommended by the committee on this subject appointed by the American Pharmaceutical Association.

The distinctions which have so long maintained a separation between the "Materia Medica" proper and its "Preparations" are fluctuating and unimportant. To one who had not given special attention to the refined reasonings of the Revisers, it might appear very arbitrary to class benzoic, gallic, or tannic acid under the one head, and citric, oxalic, or tartaric acid under the other; and he might wonder why bromide of potassium, iodide of ammonium, oxide of zinc, phosphate of sodium, sulphate of quinia, strychnia and veratria were accounted merely pharmaceutical preparations, while acetate of lead, carbonate of ammonium, hypophosphite of calcium, nitrate of sodium, sulphate of copper and valerianate of zinc were consigned to the *materia* of the manufacturing chemist. Certainly no adequate advantage appears for requiring in a large number of cases a double search from one who desires to consult the Pharmacopœia.

In this connection (as being also a matter of technical detail) it is recommended that "cross references" should be made. Thus, under the head "Opium," for example, should be given a tabular list of every preparation derived from this substance or into which it enters, as Aceta, Confectiones, Emplastra, Extracta, Pilulæ, Pulveres, Suppositoria, Tincturæ, Trochisci, Vina, including derivative alkaloids and their several preparations. Each of these should be specifically stated, with a reference to the page on which it is described. This synthetic view would add considerably to the practical convenience of consultation.

Dr. Squibb thinks that "such a revision would decimate the present lists. Not that they are entirely useless, but that they are not appropriate articles to be retained in a pharmacopœia when they take up room which might be given with greater advantage to the details of primary articles." (p. 21.) The necessity for such a restriction, or its advantage, is not very apparent. The question of "room" is one which needs hardly be considered. The first need or desideratum in such a standard is fulness and completeness: and we strongly endorse the seventh Resolution of the last Convention, "that, in the revision of the officinal list and formulas, the wants of the medical profession in all parts of the United States should be considered in reference to local peculiarities in climate and population, and that for these reasons the scope of the work should be extended rather than abridged."

The sixth Resolution of the last Convention ordered "that measures of capacity be abandoned in the Pharmacopœia, and that the quantities in all formulas be expressed both in weights and in parts by weight." For this sweeping and radical change in the construction of formulas, no foundation had been laid by any reports or proffered illustrations from those interested in the new movement; and no elaboration whatever attempted by its authors and promoters, to guide the committee in its execution of the mandate. From the failure of the revising committee to carry out this instruction (the reasons for which are briefly stated in the preface to the Pharmacopœia, p. xiv.) advantage is sought to be taken to impugn the efficiency of the Convention! "In the last revision the Convention failed to control its committee in the work, or rather the committee did not carry out the direction of the Convention, and the Convention has no redress; for, by its own organic provisions, it can only be called once in ten years, and then by the chairman of its own committee which declined to carry out its orders." (p. 12.)

While the present writer was in favor of executing the order, he never disguised from himself or from others the difficulties and confusion inevitably attendant on a premature disturbance and innovation. Taking the case of "Fluid Extracts" for example, of which there are now forty-six made officinal, we find that, excepting the single "Compound Fluid Extract of Sarsaparilla," (U. S. P., p. 167,) every one of these forty-six preparations requires 16 troyounces of the vegetable powder to be made into 16 fluidounces of the finished fluid extract. That is to say, each fluidounce of the preparation contains, by the existing formula, the extractive matter of a troyounce of the constituent material. How or in what proportion these valuable and elegant preparations are to be made by *weight* is not so obvious, for of course they cannot be made ounce for ounce by weight.

There seems to be little room for doubt that the abortive attempt of the last Convention to introduce the gravimetric system will prove but a temporary delay, and that it will serve more effectually to secure the result in the Convention of 1880. The principal advantage of the method is its greater accuracy than the prevailing volumetric practice.

It is to be hoped that those so ready both to improve and to censure, will exercise their inventive ingenuity on practicable details as well as on "glittering generalities." And while it is much to be desired that the next Committee of Revision shall be composed of entirely new material, it is also earnestly hoped that while there is yet time, the formulas will be so well considered and so intelligently worked out by the constituent bodies and their delegates before the meeting of the Convention, that this enormous additional labor and responsibility shall not be thrown entirely upon the new Committee.

Another proposed reform (partly embraced in the conclusion of the sixth Resolution above cited), which has attracted some attention and discussion, is the further step of abolishing specific weights entirely and expressing all formulas in gravimetric "parts." The ostensible advantage of this system of mere *ratios* (or, as it may be called, the *algebraic system*) is that the same formula could be executed in any quantity and by any system of weights, and consequently that it would form an important advance in the direction of an international Pharmacopœia. On the other hand, the prospect of an international Pharmacopœia with Great Britain (to whom we are most nearly related) appears to be too remote to justify much sacrifice on our part to

encourage hope deferred. There are other international uniformities, as of weights and of moneys, which are certainly of much greater importance, and which are likely to take precedence in time.

This topic was made the subject of one of its "Queries" by the American Pharmaceutical Association in 1875, and received from Prof. Sharples an intelligent examination in a paper presented at the meeting of 1876.[1] The "Query" was renewed at the same session in the following form: "What advantages would result from the substitution of parts by weight for absolute quantities in the revision of the Pharmacopœia? and if any disadvantages, other than those incident to change, what are they?"[2] This question will receive a still fuller discussion at the next meeting of the Association in September next (of the present year, 1877.)

Theoretically, nothing appears simpler than the translation of concrete weights into abstract "parts"; or these latter being given, the converse translation of them into any given order of weights. But the practical application is by no means so easy as the general direction. Let us take a single case for trial—at random. The Pharmacopœia opens at page 274. We will transform the formula at the bottom of the page, (that for the Aromatic Spirit of Ammonia) into weights—say grains, then these into their lowest numbers for "parts," and lastly these into convenient whole numbers by an approximation, to represent finally the proportions "in parts by weight."

SPIRITUS AMMONIÆ AROMATICUS. (*U. S. P.*)

1		2 Specific Gravity.	3 By Weight.	4 In lowest terms.	5 Approximately.
Take of					
Carbonate of Ammonium,	℥i	. . .	480 grs.	37	36
Water of Ammonia,	f℥iii	·96	1312 "	101	100
Oil of Lemon,	f℥iiss	·847	120 "	9·23	10
Oil of Nutmeg,	♏ xl	·95	36 "	2·77	3
Oil of Lavender,	♏ xv	·875	13 "	1	1
Alcohol,	Oiss	·835	9131 "	702	700
Water,		1·000	(1879 ")	(144)	(150)
q. s. to make	Oii		12971 grs.	997	1000

[1] Proceedings American Pharmaceutical Association, 1876, vol. xxiv, pp. 453–56.
[2] Proceedings American Pharmaceutical Association, 1876, vol. xxiv, p. 15.

The above estimates of grains in the third column assume the specific gravities given in the second column. Having got the formula into this form, what shall we do with it? Evidently we must simplify the numbers as in the fourth column; but as we have fractions here, a further step is necessary to give us the nearest whole numbers as in the fifth and last column. It is true that this last result is only an approximation to the original formula; but the difference in this case is not particularly important.

Supposing, then, the last column (or any other approximation that may be preferred) to represent the improved formula "in *parts* by weight." The merit of these "parts" is that they may equally well represent any units of weight. Let us call them grammes, then the whole quantity will be 1000 grammes, or 1 kilo-gramme; equal to $32\frac{1}{6}$ troyounces, or ℔ii ℥viii Troy, (2℔s. 3oz. *av.*) nearly the quantity of the original formula. But the apothecary would doubtless prefer to just fill his quart bottle, as he has been accustomed to do by the old formula. Now, it is quite evident that to convert this product of the new formula, 1 kilo gramme, into 1 quart will really involve a troublesome calculation; and it will again require an approximation. If the new "parts by weight" be counted as grains, the problem will not be much simplified. Wearied by the constant labor of calculation or reduction from abstract "parts," on every occasion of employing this improved and "universal formula," the druggist will doubtless note down in the margin of his Pharmacopœia ("once for all") the actual weights or quantities which he has found it convenient to adopt. Would it not be better, simpler and less hazardous of error if, in addition to the notation of "parts by weight," the actual specific weight of each ingredient were to be officinally stated? It is quite evident that this whole question concerns the pharmacist much more vitally than it can the physician—an added reason why the Pharmacopœia should not (and cannot properly) be placed under the exclusive control and "fully-recognized leadership of the American Medical Association."

We trust that this single illustration (a comparatively simple one) of the practical labor and difficulty investing the new departure, will in the minds of the thoughtful, (not too pre-occupied with a theoretic enthusiasm) serve partially to extenuate the delinquency of the executive Committee in having, in the condemnatory language of the prosecution, "*refused* [!] to carry out the instructions of the Convention." (p.

5.) Upon the reflective there may dawn some gleam of sympathy with the dismay naturally felt by the Committee on being confronted with the formidable task which had somewhat inconsiderately been imposed upon it. The able, conscientious, and esteemed President of the Convention, and chairman of the Revision Committee, is no longer with us to justify the course he felt obliged to recommend and to urge under these harrassing conditions; but the more sacred becomes the duty of those who knew the man, to shield his memory from any suggestion of wilfulness, indifference, or want of fidelity to the high trust committed to his charge.

The professional employment of medicines involves three successive stages or processes, each by a different agent. First, the *prescription* of the remedy by the physician; second, the *dispensation* of the compounded materials by the pharmacist; and third, the *administration* of the prepared medicine by the attendant nurse, or occasionally by the patient. In the first two of these operations there is no serious difficulty in the exclusive use of gravimetric apportionment; but, in the final step, the difficulty of administering liquid doses by *weight*, appears to be insuperable. If, then, the patient must continue to take his prescribed mixture by a convenient *measure*, (as the teaspoon or the wine-glass,) it seems necessary that the quantity compounded by the apothecary, in order to give a determinate number of doses, should also be estimated in multiples of such measure; or, in other words, by a fluid *volume*.

In view of the probable adoption of a purely gravimetric system by the next decennial Convention, would it not be eminently desirable that a suitable popular measure of accurate size should be adopted by the Convention, for the administration of liquids, to supersede the common variable teaspoon? If weights are preferable to measures in the preparation of the mixture, by reason of their finer accuracy, and if such more accurate mixture must continue to be administered by volume, is there not a corresponding need that a greater uniformity and accuracy should be attempted in the final stage of the actual exhibition of the dose?

We strongly urge the recommendation therefore—in the interests of the physician and of the pharmacist, as in the best interest of the sick, that a standard spoon of accurately determined capacity should be authoritatively adopted by the Convention of 1880, and universally

assumed and recommended for use by the professions. Should the metric system of weights be adopted, such standard officinal spoon might very conveniently have the exact capacity of four "fluigrams" of distilled water; a volume expressed by the French metric system, as four *millilitres.* The capacity of such a spoon (a "metrispoon") would be in our present measures 64·9 minims; the ordinary teaspoon being supposed to hold 60 minims or one fluid-drachm.[1]

Omitting several minor points in consequence of the unreasonable length already reached by this communication, this portion of the subject may be concluded with a reference to the suggestions already made by the committee of fifteen appointed by the American Pharmaceutical Association for the purpose of considering and reporting upon any improvements which may be thought advisable in the next revision of the Pharmacopœia. This committee has recommended: "1st, That all measures of capacity be abandoned; 2d, That all substances be weighed, and that the quantities be given in parts; 3d, That all substances in the U. S. Pharmacopœia be arranged alphabetically; 4th, That the descriptions of crude drugs be made more exact and complete; 5th, That the formulas for the manufacture of chemicals, which are recognized as produced entirely by manufacturing chemists, be omitted, (with the exception of such chemicals as produce different results when made by different processes), and that a description of the chemical be substituted with such tests as shall be conclusive as to its identity and purity; 6th, That it is desirable that there should be a larger number of tables for reference introduced into the U. S. Pharmacopœia.

Remembering that the Association has never had even a representation in the decennial Convention, such enlightened activity and disinterested zeal in attempting to awaken inquiry, to stimulate suggestion, and to promote discussion in regard to all the details of the approaching revision, cannot be too warmly applauded. Where shall we look throughout our land to discover traces of any similar interest, or any similiar procedure in any organized body of either profession? If this spontaneous heartiness of co-operation in a great public work has in any quarter of the medical domain occasioned among any individuals a touch or suspicion of jealousy, we believe that a very brief experiment in devoting attention to the defects or the requirements of the

[1] The suggestion of a standard "metrispoon" was published by the writer in the *Medical and Surgical Reporter* for February, 1877, vol. xxxvi, pp. 171, 172.

medical standard, with a view to offering solid projects of improvement, will very speedily dissipate the last traces of any such sentiment.

III. The method of *publication* is a subject upon which there has existed considerable difference of opinion. Heretofore the Pharmacopœia has been "published" by a well-known and responsible publishing firm in the city where the committee has held its sessions, and where the work of revision has been done. This publishing house has not, however, at any time owned the "copyright;" this having been held by the Committee of Revision and Publication, in trust, through its chairman. Dr. Squibb in his earlier reflections on the subject expressed the opinion, that "in order to cheapen the book as far as possible to the medical and pharmaceutical public, the copyright should be placed at a price that would just meet all reasonable expenses." (p. 9.) Practically, this is precisely what has always been done, excepting that the copyright was never actually sold. The only pecuniary income from the publication ever received by the owners of the copyright, has been the pittance of some two hundred dollars or thereabouts, required by the committee for actual outlays. Beyond these slight necessary expenses, the committee has permitted no remunerations; but has studiously labored to so limit the profits of the work, that it should be furnished to the public at the lowest remunerative price.

It is complained, however, that "what the copyright has yielded hitherto, or what it was worth, could never be known, because it was always given *arbitrarily* to one publishing house, which house declined to give any information upon this point." (p. 9.) At the time referred to in this complaint Dr. Squibb was himself a member of the revising committee, a majority of which (contrary to his wishes), instead of inviting bids from New York and Boston, or permitting a competitive scramble for the work, as a valuable prize, decided (wisely, as we believe) on having the printing done under its immediate supervision, with the constant opportunities of very frequent *revises* of the "proofs." And it was also insisted on that a careful estimate should be made for minute criticism, whereby the book should be put upon the market at the cost of production. The result was that the revision of 1860, published in 1863, when gold was rising to its highest tide, and prices were correspondingly inflated, was, by this "arbitrary" conduct of the committee, retailed at the price of *one dollar* in currency!

It is safe to say that no book of corresponding size and style was produced at this time at less than *double* this price, even though it were a work of much more popular character and much larger circulation than a *Pharmacopœia!* Considering that this weakling of the press ("a mere skeleton") could by no possibility be classed with "light literature," we are biased enough to maintain that this publication was a *marvel* of cheapness. It is not believed that any respectable publisher could have offered the book at a lower rate (unless with the hope of securing a future publication of the work in better times). Whether the majority of the committee, in thus "giving it arbitrarily to a publishing house," consulted the true interests of the professions they were honestly laboring to serve is for the unprejudiced of those professions to decide. The probable influence of this course on the circulation and sale of the work, may however, be *obliquely* gathered from the unintentional testimony of our opponent, whose severest impeachment of the past utility of the naked Pharmacopœia is, that "until within the last twenty years, probably, the Pharmacopœia was but little known!" (p. 19.)

The plan now proposed by Dr. Squibb contemplates (as has been seen) the sale of the copyright to the highest bidder, in order to yield as large a remuneration as possible to those entrusted with the revision. He says: "Should the copyright be offered to a properly controlled competition, it doubtless could be made to pay liberally all the expenses necessary to having the work well done." (p. 9.) And, to prevent the danger of distributing the proceeds of the sale among too many hands, the caution is provided, that "the income from their work, if it be well done, will within a moderate time pay a few men for the time and labor they give, but would not pay a large number of men." (p. 47.)

Dissenting entirely from these views, we are yet strongly of the opinion that the time has now arrived for a considerable change in the manner of producing the Pharmacopœia. Not as a momentary or controversial impression, but as a deliberate and long-cherished conviction, we would advocate, very decidedly: 1st, the permanent retention of the copyright of the Pharmacopœia by the Convention itself, as an incorporated institution; 2ndly, the publication of the Pharmacopœia by the Convention itself, through a special committee for that purpose; 3rdly, the appointment of a treasurer by the Convention to take charge of the proceeds from the Pharmacopœia as a permanent

fund, from which the expenses of the Convention should be paid; and 4thly, the payment from such fund of all *necessary* expenses of the Committee of Revision, including the actual traveling expenses of its members.

On the first proposition but little needs be said. It can scarcely be questioned that an organization of such authority and responsibility, should have the chartered franchise enabling it to hold and to defend its property; so that in its own name and by its own act it should be legally qualified to resist either the infringements of publishers or the trespasses of aspiring associations of men willing to "relieve" it of the management of its affairs, or to "assume" the possession of its prerogatives. We believe, moreover, that it is most consistent with the dignity of the Convention that the legal possession of the copyright of its own peculiar production, should not be delegated even to its own Committee, which has heretofore so faithfully and so honorably discharged its delicate trust. The President of the Convention (and his successors or official representatives) should by the organic constitution of the body, have the duty of calling the Convention every five years, in a specified manner and at a specified time and place; and the further right to convene the body at any intermediate time when in his judgment circumstances should render it expedient.

On the second proposition it may be remarked that nothing can be more unseemly than struggles of members—the partisans of rival cities, eager to secure the supposed advantages of a local publication. Should it be decided, for instance, that the sessions of the next Committee of Revision shall be held in Boston, what could be more derogatory than a contest whether the printing and publishing of the book should be sent to a Philadelphia house, willing to *underbid* a responsible publisher on the ground, in whom the committee had entire confidence? That such local jealousies have been entertained and openly avowed is only too notorious. In the discussion following Dr. Squibb's presentation of his enterprise at the meeting of the American Pharmaceutical Association in September, 1876, Mr. Colcord, of Boston, remarked, "The United States Pharmacopœia has always been published in one city, and by one set of men; and it got into a rut and became a Philadelphia institution. Not but what that made a *better* Pharmacopœia than it would have been if it had gone to Chicago or Boston, but it was a local institution."[1] As the Acts of Congress also "have always

[1] Proceedings Am. Pharm. Assoc.: 1876. vol. xxiv., p. 637.

been published in one city," we presume by Mr. Colcord's logic they also are to be classed as "a local institution!"

Unfortunately, the city of "Fraternal Affection" has always been the acknowledged Medical Metropolis of the nation. *Unfortunately*, since here (as is sometimes the case) the reputation has involved a corresponding labor and responsibility! Whenever the Convention has desired to submit its chosen business to a selected number of zealous, hard-working men in the field of abstract medicine and pharmacy, instinctively a considerable proportion of such material has been culled from Philadelphians. Are other sections of our wide-spread Republic ambitious of the labor? Surely they have only to apply their own shoulders to the wheel! If distant portions of our common country have the misfortune (real or supposed) of a deficient representation, who is responsible for this melancholy condition of affairs? Who is chargeable with *suffering* the Pharmacopœia to become "a local institution?"

At the last meeting of the Convention, (in 1870) the number of contributions in furtherance of the Revision presented by the sixty delegates representing the pharmacopœial science of the nation (shall we add, its zeal and industry?) was—six![1] Of these six contributions *two*, beyond all reach or question of comparison, were most elaborate and valuable for the purposes of a revision. Of these two well-studied programmes, one was a Review presented by the "*Philadelphia* College of Physicians," the other was a Review presented by the "*Philadelphia* College of Pharmacy!" Do honorable gentlemen *complain* that they themselves have been indifferent or negligent? Is it the peculiar offence of Philadelphians that they have *not* been equally indifferent or negligent? Is it a proper subject of self-laudation that not a fragment of a report was submitted from any New England State? Or is it held to be a worthy ground for envious bickerings, that other cities and States have voluntarily suffered by far the largest portion of the *preliminary* labor of revision to be actually performed "in a single city"?

Where the sessions of the Committee should be held was simply a question of convenience and economy. Wherever in the judgment of the next Convention it may be deemed expedient to fix the sessions of the Executive Committee, most sincerely do we hope that Philadelphia will *not* be selected. If the mere change of *venue* should be successful in awakening a larger local interest and activity in the improvement

[1] Pharmacopœia, U. S., 1870, p. viii.

of the Pharmacopœia, a great public good will have been effected, and the profession will have true cause for gratulation.

The zeal manifested to have the work of revision specifically localized, so disproportioned to the zeal displayed in actual performance of the work, has not apparently an adequate impelling motive. Speaking from experience, we believe that one who has twice served upon the Executive Committee (as a working, not as an ornamental member), will be very glad to wash his hands thereafter from further personal anxiety, fatigue, and responsibility in the conduct of the revision. The honor or credit attending its duties is of an apocryphal character, the thanks, if any, stand at an infinitesimal figure, the criticisms upon the result not always friendly in spirit, the occupation of precious time tedious and exacting, the expenditure of real and prolonged labor very serious, and finally the compensation for all this—*nothing!* If those who appear to be so desirous of obtaining the work for New York or Boston have in view the dim perspective of a more enlarged worldly-wisdom, it is perhaps well that such anticipations should be definitely settled. To remove all occasion, either for temptation or suspicion of partiality or "mercantile bias," no course appears so direct and decisive as the exclusion of the copyright from any local or personal disposition. The practical business of publication can well be performed by a judiciously selected Committee, as the Proceedings, Transactions and Journals of learned Societies are usually conducted.

On the third proposition it is only necessary to say that a treasury necessarily follows from the possession of an income and a fund. By simply retaining the possession of its own literary property under the editorship of its Revising Committee, and the management of its Publishing Comittee, and by distributing its published work among the principal medical booksellers of the United States on the usual trade commissions, the Convention would doubtless be in the possession of a modest income quite sufficient for all its economic needs. On the other hand, the public spirit of so large, so varied and so respectable a body, would doutless be a sufficient guard against any tendency to enhance unduly the profits of the enterprise, or to lower it to the character of a mercantile speculation. In this connection it is suggested that as a just and equitable portion of the income from the work, a moderate copyright royalty or license fee should be charged for any re-production of it in a commentary or dispensatory.

On the fourth proposition there is scarcely need for further comment. The propriety of the Convention, making provision for the *necessary* expenses of its Revising Committee, will be questioned by no one. A provision for the actual traveling expenses of the members of the committee incurred in the discharge of their grave and onerous duties, falls really within the scope of the preceding statement. But on this provision we wish strongly to insist, as a step absolutely necessary, to secure attendance from any distance; and necessary, therefore, to maintain in the committee any just and proper representation of our wide-spread and diversified territory.

With these responses, criticisms, and suggestions, in relation to the future plan and management of the U. S. Pharmacopœia, we close by a quotation, and full endorsement of Dr. Squibbs' considerate words: "There is probably no subject where hasty, immature action is more to be deprecated, or where a wise deliberation is more necessary to the welfare of the single *inseparable* interest which embraces the arts of medicine and pharmacy." (p. 9.) Having felt called upon to review with some freedom the programme of improvement so elaborately and industriously set forth by Dr. Squibb, the writer would be doing justice neither to his own feelings and convictions, nor to the merits and intentions of the talented author of that programme, did he neglect to express his high personal regard and professional respect for Dr. Squibb, and his unwavering confidence in the sincere, exalted, and disinterested purpose entertained, to advance the best interests of both professions, and to elevate the character of our National standard—the UNITED STATES PHARMACOPŒIA.

INDEXING OF PERIODICALS.

The articles of Messrs. Moore and Wilder on the Use of Books and the Indexing of Periodicals are doubtless of sufficient interest to call for further practical suggestions. Mr. Wilder's card system is a good one, but I fancy the following plan, which I have used successfully for several years, will be found more convenient. I have a small set of pigeon-holes (about $34\frac{1}{2}$ in. x 13 in.), made to fit any desk. These pigeon-holes are $4\frac{1}{2}$ x 3 inches in size, and are labelled from A to Z. I take common foolscap paper, double each sheet twice upon itself, cut it into eight slips, and turn up a margin of half an inch on the left side—the dotted line marks the edge of this fold. Each slip is about

> **ACONITE.**—Very useful in neuralgia, in combination with Pot: Brom:—
>
> *Vide* Med: Gaz: p. 26, vol. v.
>
> Aconite root should be tasted to test its purity. It is *inert* if not bitter.—Squibb, Pamph: p. 21.

8 in. x 3 in. in size, and is large enough for most purposes, particularly as it is only *important* facts that one cares to preserve. With a sufficient stock of these slips on hand I am prepared for work.

In reading medical journals or other scientific periodicals, I make it a rule to mark, with a cross or other sign, on the margin of the page any article or paragraph of special interest. I then go carefully over the periodical a second time, and note down on one of my paper slips any fact or statement that I wish to preserve, heading it with its appropriate catch-word in a larger hand, and referring to my authority, volume and page. This slip I place in its proper pigeon-hole, and thus I am provided with an alphabetical register of medical notes, which I can paste together by their folded margins or arrange and put into book form at any time. C. J. CLEBORNE, M.D.

U. S. Naval Hospital, Portsmouth, N. H.

TINCTURE of KINO which will not GELATINIZE.

By PETER P. FOX, PH.G.

The difficulty of preventing the tincture of kino, U. S. P., from gelatinizing, has induced me amongst some others of our profession, to experiment with the use of pure glycerin in its preparation; and after having tried various proportions I have at last obtained a permanent preparation, and I trust done something towards solving the query, "How can tinctura kino, U. S. P., be made permanent?" The following is my formula:

Kino in fine powder, . . . 360 grs.
Alcohol, Glycerin, Water, each a sufficient quantity.

Mix four measures of alcohol with one of water and one of glycerin, then proceed as directed in the U. S. P., using sufficient of the above menstruum to make half a pint of tincture.

Prof. Remington has had a sample of this tincture since early last fall, and at this time it shows not the least sign of becoming thick.

NOTE ON RECOVERING ALCOHOL.

By J. U. Lloyd.

If the directions for preparing official fluid extracts are carefully followed, trouble is in some instances experienced in the very important after-operation of recovering the alcohol which remains within the residue. The usual process, and the most satisfactory one in my opinion, applicable alike to small or large amounts, is to continue the percolation with water after the extract is prepared, and recover the alcohol from the watery runnings by distillation; and in this latter percolation I find among pharmacists much trouble occasionally is experienced. If the materials are powdered and well packed, as directed by the "Pharmacopœia," it is often absolutely impossible to percolate with water; the ligneous portion of the mass softens and swells; the gum, mucilage and extractive matters dissolve, altogether forming a glutinous paste or mush, through which water refuses to pass. If the materials are not properly powdered and packed, the extraction of the medicinal principles of the drug is found to be difficult or impossible. Consequently the extract is likely to be deficient in strength. Less trouble is afterward experienced with the water; but mucilaginous materials, like buchu, especially such as have been exhausted with strong alcohol, cannot be easily percolated with water, even though very coarsely ground.

I find it advantageous in all cases to have the exhausted powder dumped out of the percolator and replaced loosely. I have a set of percolators of different shape expressly for residues, and require every residue to be removed from the original percolator. But this will not answer for some articles, as it seems impossible to replace them loose enough. To overcome the trouble, I have the powders of certain materials evenly mixed with sawdust as soon as they are dumped. Buchu, squills, and a few such, require about their own bulk; others, like cimicifuga and aconite, one-half part. Water will freely permeate through these mixtures. A very aggravating trouble is overcome by this simple process.

Note By The Editor.—When working with large quantities, we have found it convenient to transfer the exhausted powder to a still and inject steam under pressure. The alcohol distills over, gradually

becoming more diluted. If charged with odorous principles it may be passed through charcoal and afterwards rectified by redistillation, or it may be rectified at once with the addition of some permanganate, whereby many volatile odorous principles are destroyed.

COLLODION.

By G. H. Chas. Klie.

The "Pharmacopœia" directs to make simple collodion by taking two hundred grains of pyroxylon, and by occasional shaking to dissolve it in a mixture of twelve and a half fluidounces of stronger ether, and three and a half fluidounces of stronger alcohol. Cantharidal collodion contains in one pint fifteen fluidounces of an ethereal tincture and one ounce of a concentrated alcoholic tincture of cantharides, with one hundred grains of pyroxylon. The addition to this of one hundred and twenty grains of Canada turpentine and one hundred and sixty grains of castor oil is directed to insure flexibility.

With soluble pyroxylon the preparation of simple collodion offers no difficulties whatever; that of cantharidal collodion offers none, after a full strength spirituo-ethereal tincture has been secured. The success in making both preparations depends on the solubility of the pyroxylon. A variety of methods are followed in the preparation of this article, besides those which the "Pharmacopœia" gives.

One formula is: Take 10 fluidounces of sulphuric acid, sp. gr. 1·84 in a dish, add 12 fl. drachms of water and 10 fluidounces of nitric acid, sp. gr. 1·50, and raise the temperature to 140° by immersing the dish in boiling water. One ounce of clean cotton is then immersed in small portions at a time, keeping the liquid in motion until the liquid be nearly absorbed. Wash in water until perfectly neutral, and for preservation dry slowly and thoroughly. I have tried this formula, but without success.

Another is: Take of cotton one ounce; sulphuric acid five fluidounces; nitric acid five fluidounces. Mix the acids in a porcelain mortar, immerse the cotton in the mixture and stir it for three minutes with a glass rod until it is thoroughly wetted by the acids. Wash in water until the washings cease to give a precipitate with chloride of barium. Drain the product on filtering paper and dry in a water bath. A comment accompanies this formula, saying: "The officinal nitric

acid of sp. gr. 1·5 makes a pyroxylon which is not entirely soluble in ether; but nitric acid of sp. gr. 1·42 answers much better." This is from "Pereira's Materia Medica," etc.

According to the "Pharmacopœia," a half troyounce of cotton, freed from impurities, is thoroughly imbued in a mixture of three and a half troyounces of nitric acid and four troyounces of sulphuric acid of officinal strength for fifteen hours, after the temperature of the mixture has fallen to 90°. The product is then washed, first in cold water, until the washings cease to have an acid taste, and then in boiling water, then drained on filtering paper and dried by means of a water bath. If acids of the officinal strength can not be easily obtained, for the same quantity of cotton a mixture of four troyounces of nitric acid, sp. gr. 1·382 to 1·390, and of sulphuric acid, sp. gr. 1·833 ten troyounces is used, and proceeded as before. I have tried both of these formulæ and have had tolerably good success with the second when the directions were scrupulously followed.

Hager, in his commentaries to the "Pharmacopœia Germanica," gives a table of mixtures for the preparation of pyroxylon, which I give below. It shows the proportion and the sp. gr. of the acids in each mixture, and the number of hours necessary to complete the chemical change in the cotton:

Nitric Acid.		Sulphuric Acid. Spec. gr. 1·833–1·840.	
Parts.	Spec. gr.	Parts.	Hours.
11	1·460	11	5
12	1·450	12	6
12½	1·440	13	7
13	1·430	14½	8
14	1·420	16	9
15	1·410	17	10
16	1·400	18½	12
17	1·390	20	15
18	1·380	22	20

Comparing the second formula of the "Pharmacopœia" with the one that ought about to correspond with it in this table, a conspicuous difference is noticed. The former uses four parts nitric acid, sp. gr. 1·390, to ten parts sulphuric acid, sp. gr. 1·833, whereas, the latter uses seventeen parts nitric acid, sp. gr. 1·390, to twenty sulphuric acid, sp. gr. 1·833–1·840. Whether this mixture of Hager makes soluble pyroxylon I cannot say. I have used mixtures approaching it in composition, but never with success.

I have had the most success with the following old formula in making pyroxylon; in fact I have not yet had a failure with it: Mix in a mortar, of the proper size, $7\frac{1}{4}$ ounces of granulated nitrate of potassium and $6\frac{3}{4}$ fluidounces of sulphuric acid, and immediately steep in it, with the aid of the pestle, 180 grains of cotton, freed from impurities. Let stand 12 to 15 hours, wash the product thoroughly, first in cold and then in boiling water, and dry by means of a vapor-bath, or, if it is to be used immediately, displace the water by alcohol and express. There is another version of the same formula, saying: Wash, after five minutes' immersion, in the mixture as above, first in cold and then in boiling water. If the latter is done, soluble pyroxylon will not be obtained. When the washing is performed in cold water alone the product will be soluble and explosive, but if it is completed in boiling water the product will lose its solubility but retain its explosiveness. The acid used in this formula may vary between 1·833 to 1·9 without necessitating a change in the proportion.

When a mixture of acid, nitrate of potassium and cotton has stood 12 to 15 hours it will have formed into a solid cake, which it takes some time to soften sufficiently that the pyroxylon may be conveniently and thoroughly washed. This is performed first in cold and then in boiling water, the latter in this instance not affecting the solubility of the product in the least. By both of these manipulations, viz., 12 to 15 hours' or 5 minutes' immersion, soluble pyroxylon is obtained, providing no boiling water for washing is used after the latter.

To see whether the temperature of the mixture had any appreciable influence on the solubility of the product, instead of adding the cotton immediately after mixing the nitrate of potassium and sulphuric acid, the mixture was placed aside for an hour, stirring it in the meantime three or four times to prevent caking. Upon mixture, the temperature rose to 122°F., and in one hour it had fallen to 78°. The mixture now had a viscid consistence something like granulated honey, and it was found somewhat difficult to incorporate the cotton. After 24 hours the product was thoroughly washed and dried, and proved to be perfectly soluble. This proves tolerably certain that the temperature of the mixture does not exert any influence in making soluble pyroxylon by this process.

Whether the nitrate of potassium formula can be used for the manu-

facture of pyroxylon on the large scale I cannot say, not having worked on more, at any one time, than one ounce of cotton.

I have pyroxylon on hand, prepared according to this formula two-and-a-half years ago, which has not undergone the slightest change, but is as soluble now as when first made. It has been kept in the dry state in a common flint-glass ground stoppered bottle, and not protected from the light. Some other specimens, treated the same way apparently, would, in the course of a couple of months, decompose. This is a tolerably certain indication that the washing was defective. This ought to be done in a most thorough manner, first using clear water, then some alkaline solution to saturate any trace of acid, and lastly, again clear water, and then boiling water to remove the alkali. Cotton, when changed to pyroxylon, increases considerably in weight; 180 grains were found to weigh 290 grains, or 61 per cent. increase in weight.

Finally, I cannot but say that although the formulæ of the "Pharmacopœia," if strictly followed, will give good results, still, even if not very strictly followed or not very carefully manipulated, by the nitrate of potassium formula I have always obtained uniformly soluble pyroxylon.

Lowell, N. St. Louis, Mo.

LINIMENT IODIDE OF AMMONIA.

By Theodore G. Davis, Ph.G.

I was induced, from the large amount of advertising and high testimonials given to "Giles' Liniment Iodide of Ammonia," to look into its composition with a view of framing a satisfactory formula, should such prove a desirable addition to our list of liniments. It smells strongly ammoniacal, slightly camphoraceous and lavender-like; when mixed with water it becomes milky, and globules of oil may be seen floating on the surface. Iodine could not be detected by chlorine water and starch, nor was any precipitate produced when boiled with hydrate of potassium until all odor of ammonia had disappeared, acidulated and tested with acetate of lead and mercuric chloride. A quantity was evaporated, by means of a water-bath, to a small bulk, thus getting rid of the oil of lavender, alcohol, and greater part of the ammonia; water was added, and the whole thrown on a filter, thus sepa-

rating the camphor; a portion of the filtrate was neutralized with muriatic acid and tested by cupric and ferrous sulphates; it *did not* yield a precipitate. I then estimated, with nitrate of silver, the quantity of *iodine*, and found *one-tenth* grain as iodide of ammonium.

From the results of a number of experiments, the following would give a very similar preparation, containing sufficient "iodide of ammonia" to give it a name.

Take of	Iodide of Ammonium,	grs. ii
	Camphor,	
	Oil of Lavender,	*āā* ℥i
	Water of Ammonia,	℥iv
	Alcohol sufficient to make	Oi

Mix.

If a liniment of iodide of ammonium should prove desirable, I would suggest the following, as containing iodine in a form of combination—iodide and iodate, most favorable for absorption and the elimination of *free* iodine.

Take of	Water of Ammonia, (10 per ct.)	f℥ii
	Glycerin, or	
	as I prefer, Soap Liniment,	f℥ii
	Tincture of Iodine,	f℥viii
	Alcohol,	f℥iv or q. s.

Mix the soap liniment (or glycerin) with the tincture of iodine and add the alcohol and ammonia; shake and add alcahol to make one pint. When first mixed it is of a ruby red color, but in two or three days becomes colorless, affording a cleanly preparation, which may be appropriately called a liniment of "iodide of ammonia," but the correct name of which would be Linimentum ammonii iodidi et iodatis.

Bridgeton, May 5th, 1877.

CREASOTE AND CARBOLIC ACID.

BY ADOLPH GRAETZEL.[1]

In England, Morson's creasote is preferred to beechwood-tar creasote, on account of its pleasant oder. Comparative experiments were made with it, and with the following substances: crystallized carbolic acid; commercial beechwood-tar creasote, highly purified and distilling com-

[1] Translated and abridged from "Archiv der Pharmacie," Feb., 1877, by E. Lamhofer.

pletely between 200–226°C.; further, guaiacol and creasol which were produced from the potassium compound of creasol, purified by repeated crystallization from alcohol and ether, and then obtained by fractional distillation. The creasote and carbolic acid were dissolved in hot water, allowed to cool and then filtered.

A. The aqueous solution of:

To 15 cc. of test-fluid added one drop of:	*Beechwood tar Creasote*	*Carbolic Acid.*	*Morson's Creasote.*
Ferric chloride (cryst.) dissolved in 10 pts. of water	First blue, then brown; after standing, orange	Violet, lasting	First blue, then olive-green, at last dirty yellow
On further addition	Dark-brown precipitate	Violet, lasting	Light-brown precipitate
Ferric acetate dry, dissolved in 10 pts. of water	Brown, afterwards turning somewhat to violet, and at last brown precipitate	Brown and clear solution	Same as carbolic acid
Ferrous sulphate, dry, dissolved in 20 pts. of water	Blue, then acquiring a violet tint, and at last brown precipitate	Violet, lasting, without precipitate	On dropping in, grass-green; then yellow precipitate
Lead nitrate, dissolved in 10 pts. of water	Clear, without effect	Turbidness; after standing, a little precipitate	Same as carbolic acid
Stannous chloride, dissolved 10 parts of water	White precipitate, soluble in excess of stannous chloride	Slight precipitate; insoluble in excess	Same as carbolic acid
Neutral acetate of lead, dissolved in 10 pts. of water	White precipitate, soluble in excess	Slight precipitate; soluble in excess	White precipitate; only partially soluble in excess

B. 1 *part Creasote, or Carbolic Acid, in* 10 *parts of Alcohol* (92 *per cent., Tralles*).

Aqueous solution of ferric chloride with one drop:	On dropping in, blue; then green	On dropping in, violet; then green	On dropping in, green; then beautiful cerulean blue

C. Creasote and Carbolic Acid, unmixed.

With saturated alcoholic solution of ferric chloride, adding 1 drop:	Dirty violet	On dropping in, yellowish-green; then brown	On dropping in, green; then turbid light-brown
On the addition of more drops:	Immediately green	Immediately green	Immediately green

Chemically pure guaiacol and creasol behaved with the above reagents like beechwood tar creasote.

Further was tried the behavior of glycerin towards creasote, in the hope of finding a reagent bv the aid of which the amount of carbolic acid in adulterated creasote could be determined. The result confirmed Read's observation ("Am. Jour. Phar.," 1874, p. 292) that Morson's

creasote is insoluable in glycerin, spec. gr. 1·250, while carbolic acid forms a clear solution. Beechwood tar creasote behaves quite differently. It does not dissolve in glycerin but when shaken with it cold takes up 92 per cent., a part of which separates again on warming, only 50 per cent. glycerin remaining dissolved. An addition of only 5 per cent. carbolic acid produces a clear solution of glycerin in creasote. But if 10 per cent. or more of oil of turpentine is added to beech-wood-tar creasote, it becomes insoluable in glycerin like Morson's creasote. The insolubility in glycerin, mentioned on Morson's labels, is therefore only a criterion for an impure article. The behavior towards ammonia, as mentioned by Read, was tried with solution of ammonia of 0·940 sp. gr. Beechwood-tar creasote, as well as Morson's creasote, took up only 15 per cent. of ammonia water, and the addition of 10 per cent. carbolic acid did not produce any change; but 15 per cent. of carbolic acid caused 5 per cent. more of the ammonia water to be taken up. It was ascertained that carbolic acid will produce a clear solution only with 25 per cent. of ammonia water, sp. gr. 0·940, and that if more be added, will separate again. Creasote in an alcoholic solution will separate on the addition of ammonia water, sp. gr. 0·940, even if it is mixed with carbolic acid, while an alcoholic solution of carbolic acid will remain clear on the addition of any quantity of ammonia water.

The ammonia which was not taken up by Morson's or beechwood-tar creasote, acquired after several hours a dirty yellow, and after 24 hours a dirty olive-green coloration; while the creasotes saturated with the ammonia water became yellow. Alcoholic solutions of the cresotes, treated with water of ammonia, produced after a few hours a beautiful olive-green coloration.

Carbolic acid treated with ammonia became violet, while the undis-ammonia remained colorless.

Chemically pure guaiacol gave with ammonia solution (sp. grav. 0·940), immediately, a white crystalline combination, which was not soluble in an excess of ammonia; the fluid portion not taken up by the guaiacol became intensively green after several hours.

Experiments made with pure guaiacol by boiling with nitric acid resulted in the production of oxalic and picric acids; and pure guaiacol, creasol and creasote gave a blue reaction with anilin and hypochlo-

rite of sodium, which Prof. Jacquemin (1875) regarded as characteristic for carbolic acid.

Carbolic acid produces with bromine water a dense white precipitate of tribromphenol; a similar but orange-colored compound is formed with creasote.

The "British Pharmacopœia" mentions among the qualities of creasote, also: "A slip of deal dipped into creasote, and afterwards into hydrochloric acid, acquires, on exposure for a short time to the air, a greenish-blue color."

But this coloration of pinewood is obtained, not only with creasote, but also with carbolic acid and muriatic acid, and is, according to Tiemann and Haarmann, a characteristic reaction of coniferin.

From the above may be seen that the different reactions suggested for creasote and carbolic acid can only be relied on if each product is in a chemically pure condition, but that it is difficult to prove adulterations of creasote with carbolic acid if the addition is made in a proportion not exceeding 15 or 20 per cent.

The above reactions have already shown that Morson's creasote widely differs from beechwood-tar creasote, a fact which was confirmed by the further investigations. After treating it with caustic lye, an intense odor of a fine quality of oil of turpentine appeared, to which the pleasant odor of English creasote is due.

The high boiling point of 214 to 239° C. leads to the suspicion that it contains, also, other oils, which, however, are very difficult to separate.

The author has had no difficulty in obtaining from pinewood-tar a product exactly like Morson's creasote, and this seems to be its true source. While the purification of beechwood-tar creasote is connected with great difficulties, the preparation of such a mixed body as pinewood-tar creasote is very easy.

But this is lacking the principal constituent of beechwood-tar creasote—*guaiacol*, and, considering the great quantity of foreign substances in Morson's creasote which have not been investigated, its physiological and medicinal qualities cannot be equal to beechwood-tar creasote. The medicinal qualities of pinewood-tar creasote, on account of its impure condition, might often have just the opposite effect of what we are entitled to expect from beechwood-tar creasote, and it should be rejected, therefore, as unfit for pharmaceutical purposes.

Pure beechwood-tar creasote consists chiefly of guaiacol, with a little creasol, and should have the following qualities:

It is a colorless, or nearly colorless, oily fluid, of 1·08 sp. grav., distilling, unaltered, between 200° and 250° C. After exposure to light for several months, even in open glasses, it should only become light-yellow (wine color), and not red. Creasote which turns red contains foreign bodies, and is not fit for medicinal use. It must be entirely soluble in caustic lye, and on the addition of water carbohydrogen oils should not separate. Most of these are very difficult to remove, and possess a disagreeable odor. It should answer to the above-mentioned tests, and be soluble in 80 parts of cold water. Boiling water takes up a larger quantity, but separates it again after several days. It takes up 50 per cent. of its volume of glycerin—sp. gravity 1·250.

An adulteration of creasote with carbolic acid can be approximately determined by fractional distillation, and especially by combining with a saturated alcoholic potash lye, and recrystallizing from ether. The carbolic acid enters the mother-liquor, from which it may be separated by an acid, and its presence proved by another distillation.

PRACTICAL NOTES ON THE ROTATORY POWER OF THE VOLATILE OILS.

By F. A. Flückiger.[1]

If we say that the solid or fluid (at the ordinary temperature) ethereal oils are the bearers of the odor and mostly also of the taste of the respective plants, this sentence will pretty well express the general idea of the nature of the ethereal oils and stearoptens. Though little accurate, it is still easier to dispute this definition than to give a more satisfactory one. Some volatile oils, which are liquid at 17°C., have very little odor, as for instance the oil of the seeds of Nigella sativa, and amongst the solid parts of the ethereal oils many are entirely odorless, like the crystallizable parts of rose- and bergamot-oil. The odor is therefore not an indispensable necessary quality of these bodies, neither is the distillability, as many of the oils are not distillable to the last drop.

If we must acknowledge that no quality can be mentioned as being

[1] Abstract from a paper published in "Archiv der Pharmacie," March, translated by Edward Lamhofer.

unexceptionally common to all these bodies, we must admit the correctness of the negative affirmation, that not one of the so-called ethereal oils is an unmixed body—a pure, definite chemical compound. Nearest to it are the volatile oils of mustard and bitter almond. Even the numerous terebens of the simple formula (C_5H_8) seem to be mixtures, probably of $C_{10}H_{16}$, $C_{15}H_{24}$, $C_{20}H_{32}$, and the slight generation of gas, which commences in the cold when oil of turpentine is acted upon by sodium, indicates oxygen, although oxidized substances (water?) are only present in a very limited quantity in the hydrocarbons of the abietineæ and of most aurantiaceæ. We must therefore always remember that volatile oils are mixtures, and naturally mixtures in various proportions, a fact which is readily observed in the oils of parsley fruit and of Mentha rotundifolia. The yield of the former is one-half per cent., and if the distillate is left undisturbed at about 25°C, it will separate in nearly two equal parts, one rising to the surface, the other sinking to the bottom of the water; both portions turn the plane of polarization to the left, the last one much less than the first. The oil of wild-grown Mentha rotundifolia, which was prepared in July, 1876, showed at a column length of 50 mill. a deviation of 39·2° to the left, while a sample prepared in September of the same year showed only half as much. Daily experience teaches us further that the chemical and physical properties of ethereal oils, and especially the fluid ones, are more subject to considerable changes than many other organic substances. These observations bring the author to the conclusion that the rotatory power of ethereal oils cannot serve as a means of recognition.

A small minority of ethereal oils is incapable of turning the plane of polarization. It is remarkable that among these are the oils of mustard and bitter almond, and several more, whose chemical constitution is also better known than the majority of the others. To this class belong the oils of anise, gaultheria, cloves, thyme and cinnamon, as far as their well-investigated principal constituents are concerned, which are lacking the rotating power. This is in fact wanting in Anethol $C_6H_4\begin{cases}O.CH_3\\C_3H_5\end{cases}$, Salicylate of Methyl $C_6H_4\begin{cases}OH\\COOCH_3\end{cases}$, Eugenol $C_6H_3\begin{cases}OCH_3\\OH\\CH=CH-CH_3\end{cases}$, Thymol $C_6H_3\begin{cases}CH_3\\OH\\C_3H_7\end{cases}$, and also in the Cinnamic Aldehyd $C_6H_5-CH=CH-COH$ and the principal constituent of

sassafras oil, the Safrol $C_{10}H_{10}O_2$ whose chemical constitution is still unknown, but may bear some relation to Anethol $C_{10}H_{12}O$, and Eugenol $C_{10}H_{12}O_2$. Mustard oil and oil of bitter almonds do not rotate at all, the other six oils only in a slight degree on account of containing traces of other volatile oils, probably Carbohydrogens.

The addition of oils able to turn the plane of polarization may be easily detected in oils which do not affect polarized light. We must declare mustard oil or oil of bitter almonds as impure, which shows only the least rotating power, and also oil of anise, staranise, gaultheria, cloves, rose, sassafras, cinnamon, which, in the tube of Wild's Polaristrobometer of 50 millimeters length, would indicate more than a few degrees. But the possibility of an adulteration is not excluded, although the samples of these oils may not show any rotating power. If there were a cheap ethereal oil which would not affect the plane of polarization, it would be an excellent means in the hand of an adulterator for diluting the more expensive oils. Such an oil is scarcely to be found in nature, but may be easily prepared.

The American oil of turpentine, of Pinus australis or Pinus Taeda, and the oil of Abies excelsa, turn to the right; the French oil of turpentine of Pinus maritima (Pinus Pinaster) and of other species, strongly to the left. By preparing a mixture of such two oils, acting in opposite direction, it would be comparatively easy to obtain an oil without effect on polarized light. Oil of turpentine is by no means the only one possessing such properties. Sainte-Claire Deville found oil of elemi to have a left rotation; the author observed a right one in oil of Manila elemi. Carvol from caraway turns to the right, from crisped mint to the left. Some camphors, gums, sugars, organic acids and alkaloids are cited as compounds, either chemically identical or closely related, and still of very different optical behavior.

Mixtures in which the rotatory power of one substance is neutralized by the opposite action of another accompanying body, are to be expected in nature, and in fact, present. Very probably changes are naturally produced by various unknown causes.

In turpentines we find very often constituents of opposite rotating power. Venice turpentine, for instance, if diluted with aceton or benzin, turns to the right; the oil distilled from it to the left, and the remaining resin to the right. Canada balsam and Strassburg turpentine have a similar behavior. It is therefore to be assumed that

the magnitude of rotating power of such mixed bodies as ethereal oils is the product of different co-operating factors. If the constituents of the oils were always mixed in the same proportions, the rotating power might also remain the same. The author discusses also the effect of solvents upon the rotating power, the variation in this respect of undoubtedly genuine volatile oils, the similarity in the behavior of very different oils, etc., and concerning the value of the rotating power as a test for volatile oils, arrives at the following conclusions:

I. Among the constituents of volatile oils are both rotating and non-rotating.

II. The rotating power of an oil is the product of the rotatory power of its single constituents.

III. These constituents, being present in changeable proportions, it is on this account that one and the same oil does not always exhibit the same rotating power.

IV. A second reason is to be looked for in the fact that a body of a definite chemical composition, for instance the molecule $C_{10}H_{16}$, on keeping, may undergo chemical changes (by taking up O or OH_2) which would also affect the optical qualities of the oil.

V. The rotation is further influenced by the quality and quantity of substances, which themselves have no effect on the plane of polarization.

VI. The same influence is to be expected in mixtures, in which several optically active substances are present. How complicated these qualities may, and in ethereal oils certainly must be, will be illustrated by the following considerations: A is an optically indifferent stearopten, dissolved in B, a left turning terebene, and accompanied by C—perhaps produced by oxidation of the former, and acting to the right. The rotation of the oil will in the first line depend on the relative proportions of B and C; should C have a much higher boiling point than B, a slight variation in the process of distillation alone would be sufficient to produce considerable differences in the volatile oil of the same plant. Another question would be whether the presence of "A," regardless of the simple fact of dilution, would not affect the optical qualities of "B" and "C."

VII. Although the rotating power is the result of different co-operating powers, we must further consider that even these results, according to "IV," cannot be accepted as unchangeable.

VIII. The genuineness of optically indifferent volatile oils, and of such whose principal constituents are optically indifferent, can, for the reasons stated, only be inferred with caution if they show none or only very little rotating power.

The author comes to the conclusion that the rotating power of volatile oils is of no real practical value to the pharmacist, although he would not like to see it omitted in a full scientific characteristic.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Preservation of Aqueous Solutions of Tartaric Acid.—Wittstein has, as early as 1842, directed attention to the fact that the flocculent masses which appear in a solution of tartaric acid soon after it has been made, is not caused by the decomposition of the acid. It being desirable to have such a solution on hand for analytical purposes, he has tried the preservative effects of salicylic acid with complete success in a solution made with 1 part of tartaric acid, 5 parts of water, and one one-thousandth part of salicylic acid. After three months it was as clear as when first made.—*Zeitschr. Oest. Apoth. Ver.*, No. 7.

Beech Tar Creasote.—F. Tiemann and B. Mendelsohn have made the following observations: The fraction of creasote boiling at 220°C. consists mainly of creosol and phlorol, most of the former of which is separated as potassium salt by dissolving the oily liquid in its own volume of ether, and adding to it a concentrated alcoholic solution of potassa; *creosol* $=C_8H_{10}O_2$ is liberated by an acid; when boiled for several hours with acetic anhydrid, it is converted into *acetylcreosol* $=C_{10}H_{12}O_3$, an oily liquid, from which *vanillic acid* $=C_8H_8O_4$ may be obtained by diffusing the former in diluted acetic acid and oxidizing with a slight excess of potassium permanganate, neutralizing with soda, evaporating to a small bulk, acidulating with sulphuric acid and agitation with ether; on the evaporation of the ether vanillic acid is left, which, when pure, is inodorous.

The mother-liquor from the potassium creosol contains *phlorol* $=C_8H_{10}O$, which was converted into methyl-phlorol, and from this, by boiling with potassium permanganate, oxyphtalic acid $=C_8H_6O_5$ was obtained.—*Ber. d. Chem. Ges.*, 1877, p. 57–63.

Testing of Salicylic Acid.—H. Kolbe recommends to dissolve a little of the acid in 10 times its weight of strong alcohol, and to allow the solution to evaporate spontaneously from a watch crystal. The remaining salicylic acid will form a crystalline ring, which is perfectly white if the acid was strictly pure, but will be of a yellowish or yellow color if it was precipitated merely without further purification. If the residue has a brown color it should be rejected for medicinal purposes purposes, even if the powder was white.—*Phar. Centralb.*, 1876, No. 49.

Hager states that pure salicylic acid, equal in volume to the size of a bean, will yield after agitation with about 5 cc. of pure sulphuric acid a colorless solution, while others which yielded a white residue from the alcoholic solution rendered yellowish to brown-yellow solutions.—*Ibid.*, No. 51.

Test for the Presence of Carbolic in Salicylic Acid.—Prof. Almén employs for this purpose ammonia and chlorinated soda, which produce with carbolic acid a blue color, turning red by acids and blue again on the addition of an alkali. Solutions of phenol, containing one in 5,000, produce the color at once; solutions one in 50,000, only after 24 hours. Salicylic acid does not give this reaction. It is important that an excess of chlorine be avoided, and that sufficient ammonia be added to impart an alkaline reaction.—*Phar. Zeitung.*

Dispensing of Salicylic Acid.—In case salicylic acid be prescribed with water in insufficient quantity to yield a permanent solution, James W. White recommends to dispense it suspended by the aid of tragacanth, 20 grains of which will be sufficient for a 6 oz. mixture. A good pill mass will be obtained by beating salicylic acid with one-tenth its weight of borax and the same quantity of glycerin; 6 grains of the mass represent 5 grains of acid, and do not form an inconveniently large pill.—*Phar. Journ. and Trans.*, Dec. 16, 1876.

Hydriodic Acid.—Prof. H. Kolbe finds the following the most satisfactory method for preparing this acid: A retort containing 10 parts of iodine is filled with carbonic acid gas; afterwards 1 part of phosphorus is introduced in small quantities, heat is then applied for a short time to the liquid mixture of bi- and teriodide of phosphorus, and when cooled again 4 parts of water are added. A copious evolution of hydriodic acid gas, free from iodine, takes place on the application of a moderate heat.—*Jour. f. prakt. Chem.*, 1877, p. 172.

Artificial cherry-laurel water, resembling in odor and composition that obtained by distillation from the leaves, may be prepared, according to A. Ripping of Rotterdam, by dissolving 6 grams of oil of cherry-laurel and 4·5 grams cyanide of potassium in one half liter of water, and distilling over a direct fire from a tubulated retort, a current of carbonic acid gas being passed through it at the same time. (The distillate is afterwards diluted with distilled water so as to contain one-tenth per cent. HCy.) Thus prepared it is free from formic acid, and contains variable quantities of ammonium cyanide, like the water obtained from the leaves; if oil of bitter almonds be substituted for the cherry-laurel oil, a preparation very different in odor is obtained.—*Archiv d. Phar.*, Dec., 1876, 526–531.

The best emulsion of chloroform, according to Jaillard, is obtained by agitating it with 100 times its quantity, or more, of milk, which may be sweetened; it thereby becomes very finely divided, and remains permanently suspended.—*L' Univer. Pharm.*, 1876, p. 323.

Antispasmodic Potion.—Jeannel recommends the following formula, proposed by Hermant, as a valuable substitute in such cases where the bulk of the officinal (French) preparation is an objection: Oil of peppermint 1 gram, 80 per cent. alcohol 6 grams, Sydenham's laudanum 10 grams, ether 30 grams. Ten drops of this mixture, added to a tablespoonful of water, are stated to represent 15 grams of the former.—*Jour. de Phar. d'Anv.*, 1877, p. 72.

The French "Codex" cantains a formula for antispasmodic potion and one for opiated antispasmodic potion; the former is made by mixing syrup of orange flowers 30 grams, orange-flower water 30 grams, linden-flower water 90 grams, and ether 2 grams. The latter is directed to be made with syrup of opium 15 grams, simple syrup 10 grams, orange-flower water 15 grams, water 100 grams, and ether 1 gram.

Iodoform Pencils have been recommended by Dr. Gallard in the treatment of superficial ulcerations of the neck of the uterus, by introducing them to the ulcerated part and keeping them in position by means of a plug of cotton. They are made by intimately mixing 10 grams of iodoform with 0·5 grm. gum arabic and with mucilage, forming a pill mass, which is to be divided into 10 cylinders of 4 centimeters (about 1½ inch) length, when they are dried in the air and preserved from contact with the light.—*Union Méd.*, Jan. 7.

Change of Cantharidin in Cantharides.—R. Wolff, of Buenos Ayres, used for his experiments Lytta aspersa, which is there generally employed. On treating 100 grms. with ether, ·815 grm. cantharidin was obtained, besides some fixed oil which, after saponification, yielded ·04 grm. more of that principle. The lytta, exhausted with ether, was now extracted with warm water, the liquid evaporated to a syrupy consistence and precipitated with barium chloride. The washed brown precipitate was mixed with an excess of hydrochloric acid, evaporated to dryness and the residue exhausted with chloroform, which on evaporation and washing with ether left ·46 grm. of white tabular crystals which possess vesicating properties, are soluble in water, more in alcohol and ether, and rather freely in chloroform and acetic ether. On evaporating the latter solution, cantharidin is left. It is soluble in sulphuric acid, and on the addition of water cantharidin is precipitated, sulphate of ammonium remaining in solution. From its solution in potassa, it is separated in an unaltered condition on neutralization with an acid. Boiling with ammonia and evaporation to dryness causes this cantharidin ammonia compound to combine with more ammonia.

This second compound crystallizes from hot water in needles; it is also vesicating, but is slightly soluble even in hot alcohol, ether and chloroform; but dissolves in acetic ether which, on evaporation, leaves cantharidin. It dissolves in sulphuric acid, from which solution no precipitation is effected by water. Acids seem to combine with it, for when its solution in muriatic acid is evaporated to dryness, the residue is freely soluble in hot water and precipitated by silver nitrate, the precipitate being insoluble in nitric acid. Heated with potassa, it is partly decomposed into the first described ammonia compound.

If cantharidin is dissolved in potassa, the solution precipitated by a salt of zinc (or copper, or magnesia), the precipitate redissolved in ammonia, and the solution supersaturated with an acid, the first-described ammonia compound is separated in crystalline granules. A similar reaction takes place, probably, in cantharides; they contain magnesium salts, and when ammonia is generated in them through the agency of moisture, the conditions for the formation of that compound are present. The above results explain also why larger yields of cantharidin are obtained by treatment with acetic ether.

The author argues in favor of preparations of cantharidin in place of the deteriorating and therefore unreliable cantharides.—*Archiv d. Phar.*, Jan., 1877, p. 22–30.

Cholesterin in Urine.—A. Poehl has found ·25 per cent. of cholesterin in the urine of an epileptic patient who had taken large quantities of bromide of potassium. It was readily extracted from the urine by agitating it with ether, and contained then a biliary acid, probably glycocholic.—*Phar. Zeitschr. f. Russl.*, 1876, p. 737-740.

VARIETIES.

Pharmaceutical Schools.—The healing art has, for ages, embraced both the application of therapeutical knowledge and the supply and preparation of remedial agents; and, until the separation of these branches as the arts of medicine and of pharmacy, at a comparatively recent time, the history of medicine, and of medical schools and literature embodied that of pharmacy; while, on the other hand, at an earlier period, both medicine and pharmacy were merged, to a large extent, in the pursuits and history of alchemy. Aside from the earliest traditions of the first crude stages of medical and pharmaceutical science in Egypt, at so remote an age as the sixteenth century B. C., as recorded in the "Papyrus Ebers," the art of pharmacy, as a special branch of that of medicine, seems to have been first practiced among the Arabs; and establishments, recognized for the supply of remedial agents are said to have been first instituted in Bagdad, in the year 754 A. D. The first systematic attempt at a methodical collection and classification of recognized *formulæ* is said to have been compiled by the Arab physician and philosopher Sabor ebn Sahel, in the latter part of the ninth century. In conjunction with medicine, pharmacy was first taught, as a branch of university instruction, at the celebrated school at Salerno. During the following centuries, the establishing of pharmacies and measures for a legal regulation of the art of pharmacy extended into Western Europe, and the newly established universities became centers of research and learning. Yet the absorbing problems of the transmutation of base metals into gold, and of the existence of a universal remedy, potent to avert disease, to heal sickness, to maintain or restore youth, and to prolong life, for centuries engaged the aims and inspired the efforts of the wisest and most learned men, in a search throughout nature for the "philosopher's stone" and the "elixir of life." The long pursuit of these phantoms, and the visionary but most productive speculations of alchemy, resulted in the accumulation of a vast amount of chemical and physical knowledge, and in the most important discoveries in the domain of chemical operations, processes and products. These added largely to the compass of the *materia medica*, and contributed much to prepare that revolution in the intellectual world, no less than in the material resources of men, which, at the close of the last century, culminated in the overthrow of old ideas and systems, and laid a foundation for the modern theories of chemical philosophy, for the subsequent wonderful strides in their practical applications to all the affairs of industrial and social life, and for their productive influence upon the advancement of physiological, pharmaceutical and analytical chemistry.

During the struggles of this remarkable revolution, which, among its other results,

separated medicine and pharmacy as independent correlative branches, the latter was the leading and most successful cultivator of chemistry, and attained at that time, and especially at the close of the last and the first half of the present century, in continental Europe, its culmination. It supplied from among its ranks the newly created chairs both of chemistry and of pharmacy, and frequently of botany also, at the universities and special schools for medicine, pharmacy, agriculture and kindred arts; the increasing branches of chemical industry and manufacrure, too, were largely and successfully occupied and cultivated by pharmacists. Pharmacy emancipated itself more and more, in the civilized countries, from co-education with and subordination to medicine; special schools, or at the universities, special chairs, for instruction in pharmaceutical chemistry and pharmacognosy, were established; and both the standard of qualification and the practice of pharmacy, like that of medicine, were restricted and controlled by the State. Since the middle of the present century, by the rapid strides in the progress and application of the physical sciences, particularly of chemistry in its various relations, the position of pharmacy has somewhat changed. Chemistry has risen to a commanding station among the physical sciences, and in the industry and wealth of nations; its application in the manufacture and supply of all chemical products cheaply on a commercial scale, has largely deprived the pharmacist of one of the original and most important and instructive objects of his pursuit—the preparation of medicinal chemicals and many of the pharmaceutical products.[1] On the other hand, pharmacy is losing scope by the decrease in the use of medicines, in consequence of the general increase of hygienic knowledge, and the progress of medical science. The former preeminently professional character of pharmacy has, in consequence, gradually given way to a more mercantile and trade aspect. But, notwithstanding the diminution of its resources and of its former scope of application, the requisite standard of proficiency is, as yet, everywhere maintained; and, in countries of a growing civilization, pharmaceutical education is continually and correspondingly raised. Most countries, therefore, at present, either have special schools for the higher education of pharmacists, or else afford instruction in the pharmaceutical branches at universities, or medical or technical institutions.

In the amount of the preparatory education required, the high standard of scientific and practical qualification, and the restrictions enforced by law and controlled by the government, Germany ranks highest. The candidate for apprenticeship must have attained maturity for the second class (*Ober-Secunda*) of the gymnasium, or must have passed through a realschool. The apprenticeship must last three years, during which time the pupil's progress, and the obligatory instruction by his master, are controlled by annual examinations by a delegate of the district government. At the close of the apprenticeship, and after successfully passing an examination before a board, also appointed by the district government, the candidate has to complete his practical experience by serving for three years more as clerk; and he is then entitled to enter upon the obligatory course of university study at any one of the twenty German universities. He is free to attend such lectures as he may choose; and, at the close of each lecture term, he may select another univer-

[1] See, also, Problems and Future of Pharmacy, "Am. Journ. Pharm," July, 1874, p. 321.

sity, according to his option; while the state requires, with uncompromising severity, the satisfactory passage of a comprehensive final examination. To this the student is only admitted after having attended the lectures and laboratory instruction for at least three lecture terms ($1\frac{1}{2}$ years); and, upon passing it, the state grants him a license for the practice of pharmacy throughout the empire.[1] Many graduates choose to acquire, by a continuation of university and laboratory studies, and by the subsequent passage of an examination before the philosophical faculty of a university, the degree of Phil.D. Similar, and nearly equally strict, is the course of pharmaceutical education and qualification in Austria, Hungary, Russia, Switzerland, Sweden, Norway and Denmark; but somewhat less strict in Roumania, Italy and Greece. In France, pharmaceutical education is controlled by the state so far that students, after a more or less brief experience in drug-stores, have to attend, for one or two years, the lectures at one of the pharmaceutical schools at Paris, Nancy or Montpelier, or at the medical and pharmaceutical schools at Nantes or Marseilles, and subsequently must pass an examination. Upon the satisfactory passage of this, the student receives, according to the time of his study and the price he is able to pay, the diploma as a *pharmacien* of the first, or of the second class. The former is entitled to establish himself indiscriminately, while the latter is allowed to do so only in small cities. The standard of pharmaceutical education is somewhat higher in Belgium and the Netherlands, but perhaps less strict in practical proficiency. The student has first to attend lectures, and then to attain skill and expeience in pharmacy, when he is admitted to examination and subsequently to practice. In Spain and Portugal, the course of pharmaceutical education, and the qualification required on the part of the state, seem to be similar to those in France. The three Spanish universities in Madrid, Barcelona, and Granada, and the medical schools at Lisbon, Oporto and Coimbra, in Portugal, afford lectures to pharmaceutical students. Education in this department, in Turkey, while it is not uniformly obligatory, embraces an apprenticeship of three years, and a subsequent attendance upon the lectures at the Imperial Institute, in Constantinople, which also has the direction of the examination, and grants licenses to those who apply for and pass it successfully. In Great Britain, the state has exerted an obligatory influence on the qualification of pharmacists since 1868; but it leaves this control to the Pharmaceutical Society of Great Britain, and to the Privy Council. The only restriction consists in a registry statute, requiring two successive examinations: a preliminary one for registration as "apprentice or student," and a minor examination, for a license as "chemist and druggist," or a major examination for a license as "pharmaceutical chemist." The state of pharmacy, and the standard of pharmaceutical education, in the various countries of Spanish and Portuguese America, is comparatively little known. In several of them, as for instance, in Mexico, Brazil, Peru, and others, the state exercises a more or less strict, although not uniformly efficient, control; while, in other states, either the qualification for the practice of pharmacy is not restricted, or the control is more nominal than real. Pharmaceutical education and practice in Canada stand in close relation to those of Great Britain and the United States.

[1] See also Pharmacy in the German Empire; "Am. Journ. Pharm.," Aug., Sept., 1871, pp. 337 and 389.

The standard of pharmacy and pharmaceutical education in the United States is not uniform, because it is not obligatory; and until recently it has been left entirely to individual option and efforts. While sporadic attempts toward some kind of legal regulation have mostly failed of virtual effect, yet a strong and increasing body of accomplished pharmacists, largely strengthened by the immigrated German element, has grown up; and, by its influence and efforts, has contributed gradually to raise the standard of pharmacy, and to attain, in several states, and in a number of the largest cities, some authoritative control of the qualification of pharmacists. Chartered local associations (colleges of pharmacy) have been established in these cities and states, and they have, in pursuit of their aims and objects, founded schools of pharmacy. Chartered schools of pharmacy were in existence, in 1876, in the following cities: Philadelphia (founded in 1821); New York (1831); Baltimore (1855); Chicago (1859); Boston (1867); Ann Arbor (1868); Cincinnati (1870); St. Louis (1871); Louisville (1871); San Francisco (1872); Washington, D. C. (1873); Nashville (1873). These institutions grant, upon their own mutually recognized authority, diplomas with the degree of Graduate of Pharmacy, to those candidates, without regard as yet to their preliminary education, who have had experience in drug-stores for four years, have attended at least two courses of lectures at one of the pharmaceutical schools, or at some medical or kindred college, where chemistry, chemical analysis, botany, pharmacognosy, and practical pharmacy are taught, and who subsequently have passed a satisfactory examination before a board of trustees of the College of Pharmacy. The colleges and schools of pharmacy in the United States have thus far acted harmoniously in their voluntary and successsful efforts for a gradual and uniform elevation of the scope and the standard of education a proficiency among pharmacists. The most serious drawback to general and permanent results consists in the absence of any efficient authoritative national or state restriction and control of the practice of pharmacy, and in a consequent excessive and detrimental overcrowding of the profession, and for causes previously stated, in a general decrease in the compass of legitimate application, and in the resources and material prosperity of the art of pharmacy.

F. Hoffmann. From advance sheets of "Kiddle and Schem's Cyclopædia of Education."

Pharmaceutical Statistics of France.—At the beginning of the present year there were in France 2,121 pharmacists of the first class and 4,089 of the second class—total, 6,210 *pharmaciens.* During the preceding ten years the number of first class pharmacists has decreased over 13 per cent., while those of the second class have increased over 22 per cent. In 1866, France had 2,457 pharmacists of the first and 3,346 of the second class, the total number then being 5,803. The Department of the Seine alone has 820 pharmacists, of whom 495 are of the first and 325 of the second class. During the 73 years preceding January 1, 1876, there have been granted in France 16,650 pharmaceutical degrees.—*Rép. de Phar.*, 1877, p. 63.

An excellent cement or paste, possessing great adhesive properties and applicable for leather, wood, etc., is obtained by coagulating milk by means of acetic acid,

washing the precipitated casein well with water, and dissolving it in a soda solution saturated in the cold, whereby a clear, thickish liquid is formed, leaving a glossy residue.—*Phar. Handelsbl.*, February 28.

Ferric chromate is obtained, according to R. Kayser, by precipitating ferric chloride with neutral potassium chromate; dried at 40°C., it contains 34·58 per cent. ferric oxide and 65·42 per cent. chromic acid, is a light orange-colored powder, insoluble in water, easily soluble in acids, and fusible to a brown mass. As it is not altered by sulphuretted hydrogen, it is preferable to chromate of lead as a paint. —*Zeits. Oester. Apoth. Ver.*, No. 1, from *Monit. des Prod. Chim.*, V, No. 20.

Detection of Rosin in Shellac.—F. Dietlen states that colophony imparts gloss to the dull fracture of shellac. Ligroin dissolves the former, but not the latter, and may be used for the estimation of rosin if used as an adulterant of shellac.—*Ibid.*, No. 5, from *Dingl. Jour.*, ccxxi.

Adulterated Wax.—It appears from a communication to the "Phar. Zeitung," No. 23, that an extensive trade is carried on from Stettin with wax adulterated with 50 per cent. of resin.

Chloral Cream.—A French pharmaceutical journal recommends the following as an agreeable formula for the administration of chloral: Take of finely-powdered sugar, 100 parts; chloral hydrate, 5 parts; water, 15 parts. Dissolve the chloral in the water, and triturate with the sugar in a mortar. An aromatic flavor is then obtained by the addition of the artificial essence of pineapple or the essence of peppermint.—*Lancet and Observer*, December, 1876.

Ammoniacal tincture of musk is recommended by Prof. Lebert to be prepared of musk 1, carbonate of ammonium 1, distilled water 10, rectified alcohol 30 parts, essence of mint 2 drops. Dose, 25 to 30 drops in water or wine.—*Med. News and Library*, March.

THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The twenty-fifth annual meeting of the American Pharmaceutical Association will assemble in the City of Toronto, Canada, on Tuesday, the 4th of September, 1877, at 3 o'clock P. M.

Members of the Association who have accepted any of the Queries, or who will have any volunteer essay to present to the Association, will please forward to the Chairman of the Committee on Papers and Queries, William McIntyre (2229 Frankford avenue, Philadelphia), a synopsis of the same previous to the meeting, as required by the by-laws of the Association.

Candidates for membership will please forward their applications, properly filled up, to the Chairman of the Executive Committee, George W. Kennedy, Pottsville, Penna.

It is also requested that the delegates from the various bodies represented in the Association will have their credentials ready to be handed in at the first meeting.

CHARLES BULLOCK, *President.*

Philadelphia, June 1, 1877.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Massachusetts College of Pharmacy.—The following named officers were elected at the annual meeting: President, S. M. Colcord; Vice Presidents, T. L. Jenks and Wm. S. Folger; Recording Secretary, D. G. Wilkins; Corresponding Secretary, G. F. H. Markoe; Treasurer, E. L. Patch; Auditor, Chas. A. Tufts; Trustees—J. C. Melvin, J. T. Leary, Henry Canning, Chas. I. Eaton, I. B. Patten, G. H. Cowdin, B. F. Stacey, S. C. Tozzer.

After the destruction of the college building, January, 1877, the School of Pharmacy was enabled to continue the courses of instruction through the friendly aid of the officers of the Massachusetts Institute of Technology, who placed their chemical lecture room and apparatus at the service of the school for the balance of the session of 1876–7.

The Eleventh Annual Commencement took place in the parlor of the Revere House, on the evening of May 10, 1877 A Levee was held during the early part of the evening, and after an hour passed in social intercourse, the President, S. M. Colcord, conferred the degree of Graduate in Pharmacy upon the following named gentlemen: Henry Knox Appleton, Jr., Edwin Porter Burley, George William Flynn, George Melvin Hoyt, Frank Bassett Meade, Jonathan Washburn Pratt, Francis Cook Simson, Geo. Howland Stoddard, John Townsend. A certificate of proficiency was presented to Miss Louise Baker. The valedictory was delivered by Prof. G. F. H. Markoe. The graduating exercises over, the company, to the number of one hundred, adjourned to the dining hall, and partook of an elegantly served dinner, given in honor of the class of '77.

The New Jersey Pharmaceutical Association held its annual meeting at Apollo Hall, in the city of Newark, May 16, the President, H. P. Reynolds, in the chair. The President made an opening address, in which he spoke of the unusual interest attaching to this meeting, on account of the recent passage of the long-desired law to regulate the practice of pharmacy—which provides for the appointment by the Governor of a Board of Pharmacy to grant certificates of registration to such persons as are qualified to practice pharmacy, and to cause the prosecution of those practicing without such certificate. He stated that it now devolves upon the Association to nominate to the Governor fifteen names, from which he shall select the board of five, and recommended that the Association constitute the five members who may compose the Board of Pharmacy, a committee to procure further legislation.

A committee was appointed to nominate fifteen members for presentation to

Governor Bedle; also a committee of three to report resolutions relative to the death of the late C. W. Badger.

The following names were selected by the Association to be sent to the Governor to constitute the Board of Examiners, five of which are to be selected:

Albert P. Brown, Camden; Jos. L. DeLaCour, Camden; Emmor H. Lee, Camden; R Frohwein, Elizabeth; R W. Gardner, Bloomfield; Chas. Holzhauer, Newark; R. W. Vandervoort, Newark; F. L. Fiend, Newark; W. M. Townley, Newark; W. R. Laird, Jersey City; Jas. R. Merccin, Jersey City; G. W. Phillips, Jersey City; James S. Stratton, Bordentown; Randal Rickey, Trenton; Franklin Dare, Bridgeton.

The following officers were unanimously elected for the ensuing year: President, Charles B. Smith, Newark; First Vice President, George W. C. Phillips, Jersey City; Second Vice President, E. H. Lee, Camden; Treasurer, Wm. Rust; Recording Secretary, A. P. Brown, Camden; Corresponding Secretary, R. W. Vandervoort, Newark; Standing Committee—First Vice President, ex-officio Chairman; R. J. Shaw, Plainfield; Wm. R. Laird, Jersey City; Charles Holzhauer, Newark; A. S. White, Mt. Holly; R. Rickey, Trenton.

We have the pleasure of knowing most of the gentlemen nominated for the Board of Examiners, and congratulate the Association for the very judicious selection.

Pharmaceutical Society of Great Britain.—At the Pharmaceutical Meeting held March 7, President J. Williams in the chair, Dr. Paul gave a description of the the California borax lakes (see "Amer. Jour. Phar.," 1866, p. 235), from which at the present time large quantities of *borax* are obtained, and Mr. Robottom spoke of the utility of this salt in the laundry and for the preservation of animal and vegetable substances. The President alluded to the value of borax in the arts as a flux, provided it could be obtained in sufficient quantity and at a low price.

A paper was read, containing notes on the *action of chlorine upon a beam of light* and on the preparation of *liquid chlorine*, by Dr. A. Senier and A. J. G. Lowe. The authors failed to obtain an absorption spectrum from chlorine, thus confirming results previously obtained. Liquid chlorine was prepared from the crystallized hydrate, $Cl5H_2O$, by draining off the liquid portion, enclosing the crystals in a combustion tube, which is sealed and afterwards heated to from 100 to 150° F., when the chlorine will appear below the chlorine water as a dense deep yellow, oily looking liquid.

At the meeting of April 4, Mr. Holmes called attention to a specimen of *gum arabic*, which formed with water a mucilage that was gelatinous when concentrated, and glairy, like white of egg, when diluted. [The same gum has been met with in the United States.—Editor.] Mr. Greenish suggested that it be examined for cell tissue and starch granules, which are observed in tragacanth.

Glass wool was also shown, and its adaptability for filtering corrosive liquids was favorably commented on. A specimen of *pure iodide of potassium* was also presented, rather as a chemical curiosity; also, some so-called *biphosphate of sodium*, which is more permanent than the ordinary phosphate and may serve a useful purpose in medicine, inasmuch as it does not precipitate calcium phosphate from solutions of calcium chloride unless neutralized.

Mr. Hancock exhibited a *machine for compounding powders*, consisting of a slightly conical cylinder, into which a sieve fits; a brush fitted to a spindle mixes the ingredients together, at the same time driving them through the sieve.

Mr. Barnard S. Proctor, in a paper on *medicine measures*, advocated to abandon the various spoons for giving medicines, and to divide liquids by the fluid drachm and half ounce, cheap measures to be furnished with each medicine. As might have been expected, the proposition elicited much diversity of opinion, but all agreed that it was a dangerous practice on the part of physicians to order powerful and even poisonous medicines in a concentrated form. Mr. Holmes very properly censured pharmacists for the introduction of such preparations, but Mr. Carteighe excused this, because in these railway times everything was wanted in the most portable form; as to the size of the dose, the primary responsibility rested on the prescriber.

Mr. Greenish made some remarks on *glycerite of tragacanth*, pronouncing it to be one of the best excipients that could be kept at the dispensing counter, and specially useful for quinia, valerianate of zinc and sulphate of iron and aloes; he prepares it by rubbing together 1 part by weight of tragacanth and 8 parts by measure of glycerin [which is one to 10 parts by weight.—Editor.] and allowing it to stand for a day or two to gelatinize. Pills made up with this glycerite did not become at all damp.

Pharmaceutical Society of Paris.—Prof Wurtz reported at the February meeting that he had obtained a considerable quantity of strychnia from the so-called *hoang nau bark*.

Messrs. P. Cazeneuve and O. Caillol described *an apparatus for exhausting vegetable powders* with volatile liquids, called digesto-still for continued displacement (*digesto destillateur à déplacement continu*). Its modification from the apparatus usually employed for the purpose will be apparent from the following description: It consists of a glass flask, surmounted by a percolator, in the centre of which a glass tube is inserted, being fastened at the lower end by means of a notched cork and terminating above in the tubular end of a curved adapter; this adapter points obliquely upwards, its mouth being connected with a reversed Liebig's condenser, and this with two Woulf's bottles in such a manner that the glass tube connecting the condenser with the first bottle reaches to the bottom of the latter, so as to act as a syphon for the liquid which may be condensed or forced into the bottle. The two bottles may be kept in cold water or ice, the last one terminating with an S safety tube containing some mercury.

In using the apparatus, some cotton is placed upon the notched cork in the percolator and upon it is packed the powder, suitably moistened with the menstruum; a sufficient quantity of the latter is put into the flask, and after all the connections have been made the flask is placed in a water bath. The vapors of the boiling menstruum ascend and pass through the glass tube (in the percolator) and the adapter into the condenser, from whence the liquid flows back again through the adapter upon the material contained in the percolator. If alcohol is used, it will rarely pass into the Woulf's bottle; but liquids like ether and carbon bisulphide will oscillate in the condenser, being forced upward by the ascending vapors during

the operation into the Woulf's bottle, from which it will be projected again upon and forced through the powder as soon as the heat for the receiving flask is withdrawn and thus a vacuum created in the apparatus In such a case the mercury may be partly projected into the apparatus and will then remain in the last bottle.

Syrup of Chloral.—P. Carles called attention to the great difference in the strength of this syrup, as made by the formulas of different authors, which vary in the amount of chloral directed between 1 and 12 per cent. Follet's syrup appears to be used in France more generally than any other, and since the dose is convenient and the odor and taste of chloral well disguised by the peppermint employed, the author recommends a somewhat modified formula, whereby a syrup even more pleasant in odor is obtained, as follows: Powder 4 grams of pure chloral hydrate in a porcelain mortar, dissolve it in 2 grams of boiling water, and add, drop by drop, of a concentrated solution of sodium carbonate until the solution has a neutral reaction. Then agitate it well with one drop of English oil of peppermint, mix it rapidly with 96 grams of simple syrup, filter if necessary, and dissolve in it one drop of chloroform. Each tablespoonful of the syrup contains one gram ($15\frac{1}{2}$ grains), and each teaspoonful 0·25 gram (4 grains) of chloral hydrate.

Mr. Husson made a communication concerning the inocuousness of fuchsin and a test for the *detection of foreign coloring matter in wine*, for which purpose he proposes the successive addition of alum and sugar of lead, the resulting lead sulphate precipitating only the natural coloring principle of wine, a statement which was pronounced incorrect by Mr. Videau.

A communication by Plauchud, concerning the *origin of natural sulphur waters* gave rise to considerable discussion, some maintaining that the conversion of sulphates into sulphides is effected by organic matters indiscriminately, while others believed it due to living organized beings.

Mr. Petit reported the results of the researches on *conia*, having found its density to be 0·846 and its boiling point at 170° C.; the hydrobromate and hydrochlorate of conia were found to be anhydrous salts.

Apothecaries' Society of Berlin.—At the meeting held February 20, Dr. Schacht presiding, Mr. Kobligk communicated the interesting observation that *syrupus althææ*, mixed with distilled water in proportions not exceeding four times the weight of the former, would gelatinize after some time. From his experiments, made with evaporating dishes and beakers of *hard glass*, by heating them under varied circumstances and cooling them suddenly, he recommends the use of such vessels.

Dr. Schacht made some remarks on the state of hydration of *quinia sulphate*. When recently prepared, Jobst and Hesse had found this salt to contain 15·32 per cent. or $7\frac{1}{2}$ molecules of water of crystallization; this statement had recently been verified by Cownley ("Phar. Jour. and Trans.," Sept. 2, 1876), the latter also finding that on exposure to 100° C. the entire amount of water would be expelled ("Amer. Jour. Phar.," 1877, p. 71). The experiments of Dr. Schacht do not appear to coincide with this statement; but when heated to 120° C. the amount of water expelled from the commercial salt varied in different samples between 11 and 14·73

per cent., variations amounting to fully one half per cent. being obtained from different layers contained in the same tin can. The apothecary, it seems, in purchasing quinia sulphate, always obtains it partially dehydrated by even short exposure to air, and Hager estimates the further loss while in the hands of the pharmacist, even if kept in well-stoppered bottles, at about 2 per cent., caused by occasionally opening the bottle.

At the meeting of March 20, Mr. Herbricht reported on *mercury peptonate*, which is now used by Prof. Bamberger in place of the albuminate formerly employed by him ("Amer. Jour. Phar.," 1876, p. 317), and which was found not to have the effects expected from it, probably because albuminates as such do not enter the circulation until after their conversion to pepton by the pancreas; animal and vegetable albumen is thus converted on being digested with pancreatic juice. Pepton is now largely manufactured by Darby & Gosden, London, and by Dr. H. Sanders, Amsterdam. Prof. Bamberger has communicated the following formula for preparing the solution: 1 gram of dry pepton is dissolved in 50 cc. of distilled water; to this is added 20 cc. of solution of corrosive sublimate, containing exactly 1 gram of this salt, and in order to dissolve the precipitate, 15 cc. of solution of sodium chloride, containing 18 to 20 per cent. of this salt; the solution is filtered after a few days. In the absence of dry pepton, Mr. Herbricht recommends to completely precipitate an aqueous solution of 1 gram of corrosive sublimate with solution of meat-pepton, to heat the flocculent mass with a little alcohol, wash it well and dissolve it in 2·6 grams of sodium chloride and sufficient water to make the solution measure 100 cubic centimeters.

Mr. von Brockhusen stated that *abies sylvate of sodium*, natrum sylvinicum abietinatum, which is prescribed to some extent, had been met with in the form of a yellowish brown non-pulverizable amorphous mass, which has an agreeable odor and dissolves in a small quantity of water, the solution becoming turbid with more water; it contains about 10 per cent. of soda and appears to be prepared from Strassburg turpentine (obtained from Abies pectinata). When prepared from the resin of common turpentine, it had the same properties except that the solution was not quite as clear and the odor less agreeable.

EDITORIAL DEPARTMENT.

State Pharmaceutical Societies.—In the list given on page 268 of our last number, we regret having inadvertantly omitted to mention the Mississippi State Pharmaceutical Association, which has been in existence for several years and was represented by delegations at three or four meetings of the American Pharmaceutical Association. The number of organized State Pharmaceutical Societies is thereby increased to thirteen, and from information recently received, it is very likely that another association will soon be added to this number. We are pleased to learn that there are preparations in progress having in view the organization of such a society in the State of Iowa, and we trust that others may soon follow, so

that in a short time there may be scarcely a State in which the pharmacists and druggists have not effected an organization for their mutual intercourse and improvement.

Expensive Medicines in Prescriptions are often a source of trouble to the pharmacist, inasmuch as customers are apt to complain if the price of a medicine exceeds what they consider a reasonable sum. The thoughtful physician will usually prepare the attendants of his patients for such a contingency; but sudden fluctuations in the commercial value of some articles may take place which the physician may not become acquainted with until he learns of supposed excessive charges on the part of pharmacists. In Germany and some other countries the prices of the various medicines are authoritatively fixed beforehand for one year, and the pharmacist is not permitted to charge more than regulation prices. Serious inconveniences must result, when from causes entirely beyond his control, advances are occasioned which may even go beyond the price he is entitled to charge. In this country, such matters regulate themselves, as is the case with all commodities; the seller naturally charges a fair advance on the cost price, and the consumer bears the burden of a rise as he derives the benefit from a decline in the commercial value of the article. At the present time the prices of quinia, morphia and some other drugs are seriously affected by the war in western Asia and southeastern Europe, and this would seem a good occasion to direct the attention of physicians to the cheaper alkaloids of cinchona, which have been again recommended recently by men like J. Eliot Howard, Dr. Weddell and others.

With these remarks we desire to call the attention of physicians and pharmacists to the following communication:

Editor American Journal of Pharmacy: I presume there is not a pharmacist in the city whose experience has not been similar to mine in this respect, viz.: The surprise and dissatisfaction manifested by customers when the price of a prescription containing a large quantity (say ʒi or ʒii) of quinia, morphia, iodoform or other expensive article is told them. I have thought for some time of mentioning it to the profession, and asking, through the "Journal," the co-operation of our medical brethren in this wise to overcome the trouble.

I would suggest that whenever physicians find it necessary to prescribe any of the expensive alkaloids or other expensive medicines in any quantity to make it an object that they would say to the patient something like this: "Now this medicine will be quite expensive, but it is the only thing that will suit your case, and I would like you to get it." Then, when the price is told them, they are not surprised, and are prepared to pay a reasonable price; but on the contrary, when they expect to pay not more than 30 or 40 cents for a prescription, and you have to charge 75 cents, $1.00 or more, they are astonished, think the pharmacist is exorbitant in his charges and taking advantage of them, and go away dissatisfied, (in fact I have many times had persons refuse to have prescriptions compounded when they have asked the price beforehand), and they and the physician have both been disappointed because the medicine was not taken, whereas, if they had been prepared (by a word from the physician) to pay a fair price everything would have been satisfactory to all parties. The way I look at it in carrying out this arrangement, it is a mutual benefit to all parties. The physician, because he will know whether the party will get and take the medicine—the patient, because he will not think he is being imposed upon, and will know before he leaves home whether he can get it or not—and the pharmacist be able to get a fair price for his goods without lying under the suspicion of doing injustice by overcharging his customers.

And now as quinia and morphia have advanced to such a high figure, and money so scarce with a great many, some arrangement of this kind would seem more imperative than ever before.

I respectfully submit the above to the attention of the professions, and hope they will give it a careful consideration.

JAMES KEMBLE.

Philadelphia, May 17th, 1877.

Nostrums in the Temple of Pharmacy, is the heading of an editorial which appeared in the April number of the "Pacific Medical and Surgical Journal," and in which we are taken to account in the following manner:

The "American Journal of Pharmacy" is, we believe, the oldest pharmaceutical journal in America, and it is published by authority of the Philadelphia College of Pharmacy, the oldest pharmacal college. Such institutions are regarded as exemplars in ethics and models in everything that concerns the interests and principles of pharmacy, both in form and substance. Hence, we were rather surprised to find an advertisement in the March number of the journal aforesaid containing these items:

"Fluid Extract Grindelia Robusta. From California. A specific in Asthma.

"Fluid Extract Xanthium Spinosum. From Russia. A cure for Hydrophobia.

"Fluid Extract Bearsfoot. A specific for enlarged spleen.

"Dr Warburg's Tincture. A celebrated remedy for malarial fevers," etc.

It is true these are not all nostrums, properly speaking, the last alone coming under that head. But "specifics" are not much better than nostrums, especially when they pretend to cure such diseases as hydrophobia. It is true, also, that advertisements of a similar character are published in nearly all the medical and pharmacal journals in America, and quite as much so in Great Britain and elsewhere. But is it not time that pharmacists desist from making such publications? Is it not time that the various pharmaceutical societies, now well organized as they are and possessing great power, should control their members in such matters? And, above all, is it not time that the leading journal in America should set a spotless example in this respect, and refuse any longer to sanction and encourage the practice? The advertisement to which we refer occupies the very first page in the advertisement department, and it is rendered the more noteworthy because the conductors of the journal publish a standing notice that "a proper discrimination will be observed in relation to the character of advertisements."

Ever since its commencement the "American Journal of Pharmacy" *has* made "a proper discrimination" in the advertisements admitted, and not only refused many that were offered, but in all cases promptly stopped them as soon as the fraudulent character of the advertised articles became known. A nostrum, properly speaking, has *never* been advertised by this journal, and we are surprised that our cotemporary objects to an advertisement of Warburg's Tincture after, for a year or more, the medical journals of this country and Great Britain have been extolling this very same preparation as a cure for malarial fevers, some having also published a formula by which, as we believe, the tincture is not made; and medical practitioners, who had not the slightest knowledge of its composition, compelled pharmacists to procure it for their use; what is known about its composition we have stated in our last number (see page 270).

But we are pleased that the strictures by our cotemporary, in regard to the other preparations, are not based upon their character as nostrums, but rather because they are stated to be a "specific" or a "cure." Personally, we do not believe in specifics and sure cures, yet it will not be denied that some, if not all, the drugs mentioned have been recommended by certain physicians as unfailing cures or prophylactics, and we may add that one of the articles objected to is advertised in the "Pacific Journal" as *the well known California remedy* for poison oak and asthma. We grant that the term "remedy" is less comprehensive than "specific," but that it implies *curative* powers will, we think, be admitted; and if so, we would point to certain pills which our cotemporary advertises, in large letters, as being "valuable as a remedy in consumption." In the same number of the "Pacific Med. and Surg. Jour." in which the above-quoted editorial appeared, we find also advertisements stating that a certain brand of codliver oil is *the best for foreign or domestic use*, and the codliver oil of another maker to be *the best and most reliable codliver oil in the world*. A certain soap is advertised as being *invaluable* for chapped hands, etc., and another

kind which *will cure* chapped hands, and is *unequaled* as an earth dressing; and a tooth-powder, made with the latter soap, is stated to *surpass anything of the kind* ever offered to the public.

Our cotemporary has done good service in battling against the nostrum evil, yet in this case he has evidently seen the mote in his brother's eye without noticing the beam in his own.

Bullrich's Salt.—A correspondent made inquiry about the composition of Bullrich's Salt, and, on confessing our ignorance, referred us to the "Text-Book of Practical Medicine," by Professor Dr. Felix von Niemeyer, vol II, page 504, where the following passage occurs:

"It cannot be denied that in recent times the regular therapeutic employment of the so called *Bullrich's* salt, a mixture of bicarbonate and sulphuret of soda, rivals the world-renowned success of these springs (Kissengen, Karlsbad, Wiesbaden, Homburg and Vichy)—a fact which is at least opposed to the asserted latent peculiarities and advantages of the natural solutions of salt."

A high laudation, indeed, from such an authority, who, however, gives no information as to how that salt came to its peculiar name. Not finding it mentioned in any of the works at our command, we applied to a friend who for several years had been a pharmaceutical assistant in Berlin, and learned from him that a merchant of Berlin, by the name of Bullrich, had sold large quantities of a salt, for which, when called for, the apothecaries dispensed bicarbonate of sodium. It is strange that that excellent compendium, Wittstein's "Geheimmittellehre," has taken no notice of it, but stranger still that a nostrum should be deemed worthy of *regular therapeutic employment*, and be lauded in a widely known medical work as *rivaling the world-renowned success of the springs* mentioned above.

Resolutions of the Philadelphia County Medical Society, in reference to Dr. Squibb's proposition to modify the manner of revising the U. S. Pharmacopœia.—At a large meeting of the Society, after a free interchange of sentiment between the members, the following resolutions were adopted as offered by Dr. Nebinger:

Resolved, That in the opinion of the Philadelphia County Medical Society, the propositions of Dr. Squibb to modify the *period* of revision of the United States Pharmacopœia and other proposed reforms, are deserving of careful consideration by the Medical and Pharmaceutical professions.

Resolved, That in the judgment of this Society, such reforms and modifications of ancient plans can be more safely entrusted to the National Convention of the Pharmacopœia and its committee of revision, than to any new organization

Resolved, That the action of this Society be officially transmitted to Dr. John C. Riley, President of the Pharmacopœial Convention at Washington, to Dr. Bowditch, President of the American Medical Association at Chicago, and to Dr. Squibb of Brooklyn.

Resolved, That these resolutions be also published in the *Druggists' Circular*, *Chicago Pharmacist*, *Medical News*, *Philadelphia Medical Times*, *Medical and Surgical Reporter*, *The American Journal of Pharmacy*, *New York Medical Record*, and *New Remedies*, as soon as possible.

Dr. Albert H. Smith presented the following resolutions which were unanimously adopted:

Resolved, That this Society does not recognize the legal or moral right of the American Medical Association to assume the work of issuing a Pharmacopœia as proposed, nor its fitness for the work, if such right existed.

Resolved, That its delegates to the American Medical Association be instructed to use every proper means, by their votes and influence, to prevent the consummation of the plan proposed by Dr Squibb.

The Society has acted wisely in directing the appointment of a committee with the view of subjecting the Pharmacopœia to a preliminary revision and facilitating the labor in this direction of the Pennsylvania State Medical Society.

The Revision of the Pharmacopœia is the important subject engaging the attention of the medical and pharmaceutical professions of the United States, and which has become so prominent at the present time through the proposition of Dr. Squibb to place that work entirely under the control of the American Medical Association. We do not purpose to enter into the merits of the claim for such control or ownership, which have been ably reviewed by Mr. A. B. Taylor; but it may not be amiss to sketch in a few words a plan by which a "Pharmacopœia" could be secured which would represent the actual wants of the medical profession and the pharmaceutical knowledge of the United States. To accomplish this object, it is, in our opinion, absolutely necessary to secure the active co-operation of as many medical and pharmaceutical societies as possible, so as to have all sections of the country fairly represented. This active co-operation should express itself in the preliminary revision of the "Pharmacopœia" by each society, which should be so full and complete that the revised work would represent a "Pharmacopœia" for the locality in which the society is located. All the local "Pharmacopœias" should then be referred to an *Editing Committee*, whose duty it should be to compile them into one. This committee may be small, not exceeding five in number, who may be selected from any locality, insuring their frequent meeting whenever necessary. During the progress of the revision, the clerical labors would necessarily be large and require the engagement of a secretary, whose duty it would be to prepare the material of all local "Pharmacopœias" in such a manner as would enable the committee to critically examine all the propositions and act intelligently upon them. The action of the committee should then, as soon as possible, be communicated to each society having prepared a local "Pharmacopœia," to be again critically examined, and the results of these examinations should be transmitted to the committee for their final action, to be based upon the suggestions and criticisms as reported to them from the various societies.

By this plan the active co operation of each medical and pharmaceutical society in every part of the country could be secured, and the work, before its final adoption, would be submitted to the judgment of a large number of experts, so that the processes could scarcely fail to be as perfect as the scientific knowledge of the country could make them.

There is still a large number of those interested in the perfection of the "Pharmacopœia," who, under the rules adopted by the Pharmacopœial Convention of 1870, are not entitled to representation. We refer to the various State *Pharmaceutical* Societies, of which we now have thirteen, and hope to have many more by 1880. But in our opinion, any labor performed by them would be gladly accepted by the National Convention, and their delegates would, we believe, be received as they should be.

It will be perceived that this plan is based upon the assumption that those who

use the "Pharmacopœia," physicians as well as pharmacists, should have a weighty and controling influence in its revision. The plan suggested by Mr. Taylor (see page 294) leaves the final revision to a larger Committee appointed for that purpose, and we think that it could likewise be made to work satisfactorily. We do not believe that the revision could be accomplished by occasional meetings, if the committee was to be appointed so as to secure a fair representation of all sections of our country; the members would either have to be placed so as to be able to leave their homes for the place of meeting of the committee, and there to devote *all* their time to the revision of the "Pharmacopœia;" or what appears to us to be the more practicable course, the labor of the Executive Committee residing at and near the place of meeting, should be at once communicated to every member of the Committee of Revision for their critical examination This would be, substantially, equivalent to the course of the preceding plan, inasmuch as the members of the Committee would doubtless be selected from the delegates of those societies who have actually gone to the trouble of the preliminary revision of the "Pharmacopœia," and could, whenever desirable, consult the society in whose name they act.

Both plans avoid that centralization of power which is likely to produce unsatisfactory results, such as in our opinion might, on close analysis, be expected if Dr. Squibb's plan was followed. This does not contemplate the active co-operation of physicians and pharmacists; or if it seeks it, will most likely not obtain it, because the voice of these bodies or their representatives will have no direct bearing upon the construction of the "Pharmacopœia." It is indeed a delegation of almost absolute power to a few, and a plan admirably adapted to secure a *local* "Pharmacopœia" for the whole country, or as it has been, privately at least, stated, a *one man's* "Pharmacopœia," secured through the preponderating influence of one individual.

We do not claim originality for either of these plans. They are simply modifications, adapted to our country, of the plan followed in the creation of the "Swiss Pharmacopœia," or at the present time, in the elaboration of an appendix to the French Codex, containing the formulas and processes for new medicaments. In both cases the formulas have been published as fast as selected, so as to secure the critical examination of the largest possible number before their final adoption.

We believe that all who feel interested in a good and complete "Pharmacopœia," should feel themselves indebted to Dr. Squibb for the candor with which he has brought up this important subject; although we believe many of his reasonings faulty, and his conclusions objectionable, yet we have to thank him for having aroused the attention of the medical and pharmaceutical professions to the great importance of the work entrusted to their care.

The following communication, referring to the same subject, was received after the above was in type; it comes from a medical gentleman, at present residing in New Hampshire.

To the Editor of the American Journal of Pharmacy:

SIR—Referring to the able review of this subject by Mr. Alfred B. Taylor, in your May issue, I respectfully submit the following as covering the objectionable features in the plans already suggested:

"That the National Convention for the revision of the U. S Pharmacopœia shall be composed of one delegate from each State medical society represented in the American Medical Association, one

delegate from each incorporated Medical College, incorporated College of Physicians and Surgeons, and incorporated College of Pharmacy throughout the United States, with one delegate from the medical department of the Army and one from the medical department of the Navy of the United States. That the delegate from each State medical society represented in the American Medical Association shall be nominated and elected by the said Association, the delegates from the said several colleges shall be nominated and elected by the said colleges, and the delegates from the two branches of the national service shall be nominated by their respective Surgeon-Generals, and be ordered by the Honorable Secretaries of the Army and Navy of the United States.

"That the said delegates shall be nominated and elected with special reference to their experience and knowledge of therapeutics and physiology, medical chemistry, medical botany and practical pharmacy, so that all classes of medical and pharmacal experts may be fairly represented in the National Convention, to the end that the Pharmacopœia of the United States may be thoroughly revised by a commission embodying the greatest practical knowledge and professional skill."

This plan, or a similar one, would do but little violence to the existing order of things; it would not interfere with any "Pharmaceutical Council" which any association may form, with a view to *aiding* pharmacopœial revision, and it would give us a truly representative convention, in which the American Medical Association would be recognized as well as all Pharmaceutical and other Colleges, not connected with that Association. There can be little doubt as to the advantage to be gained by a call emanating from the National Government—the presence of two government officials in the "Convention" would be a move in that direction; and as the formation of State Boards of Health is rapidly extending, the day may not be far distant when we shall have a "Minister of Health" to call our "National Convention," and to represent the great medical and sanitary interests of the country in the Cabinet of the United States. C.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Principles of Theoretical Chemistry, with special reference to the constitution of Chemical Compounds. By Ira Remsen, M.D., Ph.D., Professor of Chemistry in the John Hopkins University. Philadelphia: Henry C. Lea, 1877. 12mo, pp. 232.

As the title indicates, this volume is devoted to the principles upon which the theoretical structure of modern chemistry is based, and as such it is a very valuable addition to our literature, inasmuch as it discusses, in a clear and comprehensive manner, the various laws governing chemical combination and decomposition, and the various theories which have been advanced for explaining observed facts. Part first, being devoted to the general discussion of atoms and molecules, forms the ground-work for the second part, which treats of the constitution or structure of chemical compounds. Considering the multitude of compounds, and particularly the more complex ones of carbon, the so-called organic compounds, it is without question of considerable importance to the investigator to have a knowledge of the grouping together of the various elements forming a compound, since the nature of such groups, and their relation to each other, determine the chemical behavior of the body. Such considerations have gradually led to the adoption of the so-called structural formulas, which are explained in the second part, and in regard to which the author says:

As for the value of the structural formulas, which are discussed at some length in the second part of the book, it need only be said that, if it be borne in mind what they are intended to represent, they are not quite so absurd as some chemists are just now trying to make us believe they are. These formulas certainly represent known facts in regard to the constitution of chemical compounds. They do not represent these compounds as a photograph, for example, represents a building; but rather somewhat in the same way that, in Physics, lines represent forces in their magnitude and direction. Take the formulas

for what they are, and they have considerable value. Try to find in them the architectural plans of the chemical molecules, and they appear absurd. But it is very unjust to find fault with a thing for not doing what it never pretended to do, and what its originators have distinctly stated it could not do.

In our opinion, the work will prove to be a valuable aid to the chemical student who would familiarize himself with the theories of the science that have led to many important discoveries.

Die rationellen Formeln der Chemie, auf Grundlage der mechanischen Wärmetheorie entwickelt, von Baron N Dellingshausen. Zweiter Theil. Organische Verbindungen. Heidelberg: Carl Winter's Universitäts-Buchhandlung, 1877. 8vo, pp. 156.

The rational chemical formulas as evolved upon the base of the mechanical theory of caloric. Part II. Organic compounds.

While the preceding work bases its considerations upon the atomic theory, the one now before us is diametrically opposed to it. The atomic theory finds, among others, its main proofs in the alteration of the volumes of bodies and in the chemical laws of constant and multiple proportions; it is the author's aim to prove that the volume of the bodies depends upon the size, form and number of their vibration atoms, and that the combining proportions of bodies, or their chemical equivalents, are determined, without atomic composition, as the carriers of equivalent motions. The culminating point of the atomic theory is found in the modern theory of chemical structure, which finds its chief support in the explanation of the composition of the organic compounds (of carbon). This theory cannot be disproven by facts, because it does not directly depend upon such, but is altogether a chain of hypotheses: that bodies are composed of atoms and molecules; that the atoms attract each other; that they combine to molecules; that the polyvalent atoms neutralize each other; that unsaturated compounds may take the place of simple radicals. The proof, therefore, of explaining the rational formulas without presupposing the existence of molecules appears to the author to be the best weapon against the atomic doctrine.

The author has studied his subject very thoroughly. In 1875 (see "Am. Jour. Phar.," p. 479) we have noticed one of his works, a predecessor of the present one. Since then he has published another one, in which the inorganic combinations are explained by the mechanical theory, and the present one extends these considerations to the complex carbon compounds. When it is remembered that perhaps the great majority of chemists are in reality not convinced of the absolute correctness of the atomic doctrine, but rather have adopted its views, because most of the chemical facts observed may be explained thereby in an apparently natural and simple manner, it will be conceded that a work like the one before us is likely to have considerable bearing upon the evolution of chemical principles in the future.

Gmelin-Kraut's Handbuch der Chemie. Anorganische Chemie. Heidelberg: Carl Winter's Universitäts Buchhandlung.

There are now before us the first and second numbers of the second division of the second volume of Gmelin-Kraut's Chemistry, containing the metals titanium, tantalum, niobium and a considerable portion of tungsten. The revision of this

portion of the work is in the hands of Dr. S. M. Jörgensen, of Copenhagen, who has already, in an admirable manner, finished the third volume, comprising the metals of the iron, mercury and platinum groups; the subjects of the present numbers are equally complete.

Medicinal Plants, being Descriptions, with Original Figures, of the Principal Plants employed in Medicine, and an Account of their Properties and Uses. By Rob. Bentley, F.L.S., and Henry Trimen, M.B., F.L.S. Philadelphia: Lindsay & Blakiston. Parts 16, 17, 18. Price, per part, $2 00.

With the gradual progress of this interesting and important work, we have taken occasion to refer to it from time to time, and are pleased that now, when nearly one-half of it has been published, the favorable impressions received from the first few numbers have been altogether justified by the later ones. The parts now before us contain colored plates and descriptions of the following plants: Acacia catechu, Ac. Senegal, Achillea millefolium, Acorus calamus, Aristolochia serpentaria, Daphne gnidium, D. laureola, Diospyros embryopteris (used in India like the persimmon in this country), Eugenia caryophyllata, Ferula galbaniflua (not previously figured; one of the plants yielding galbanum), Lactuca virosa, Oryza sativa, Piper angustifolium (Matico), P. longum, P. nigrum, Punica granatum, Quercus robur, Q. infectoria, Rheum officinale (the rhubarb plant, figured with flowers and fruit; see "Amer. Jour. Phar.," 1876, p. 307), Santalum album, Soymida febrifuga (yielding the Rohun bark of India, a name by which also the nux vomica bark is known) and Toddalia aculeata (the parent plant of the Indian Lopez root).

Thirteenth Annual Report of the Alumni Association, with the exercises of the fifty-sixth commencement of the Philadelphia College of Pharmacy. 1877. 8vo, pp. 48.

We have already given, on page 198, an account of the proceedings at the annual meeting of the Alumni Association; besides the addresses, reports and minutes there mentioned, this report contains also the introductory lecture and an abstract of the valedictory address to the course 1876-77. Copies of the report may be obtained from the Secretary of the Association, Mr. Wallace Procter, 500 South Ninth street, Philadelphia.

Proceedings of the Connecticut Pharmaceutical Association, at the first annual meeting, held at the Allyn House, Hartford, Conn., Feb. 7, 1877. New Haven. 8vo, pp. 15.

On page 139 of our March number will be found a brief account of the second (first annual) meeting of this State organization. Upon perusal of this modest pamphlet, we cannot but congratulate our friends upon the commendable spirit which appears to have pervaded the transactions, and is more particularly evinced in the excellent address of the president and in the subject matter of the queries proposed and accepted. The latter refer to the perfection and strengthening of the organization, to apprenticeship, to the preservation of prescriptions, the labeling of medicines, the coating of pills, the powdering of extracts, the desirability of legislation and the fostering of associations for the benefit of pharmacists. From

the interest shown it is presumed that the contemplated semi-annual meeting during the coming summer will be as successful as the anniversary meeting.

The pamphlet contains a paper by Mr. R. H. Dimock proposing to prepare for dispensing a solution of phosphorus containing one-sixtieth of a grain, dissolved in 1 fluid drachm of glycerin, kept by means of a water bath at a temperature of 212°F. and in an atmosphere of carbonic acid.

Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States, for the fiscal year 1875. John M. Woodworth, M.D., Washington, 1876. 8vo, pp. 229.

Supervising Surgeon-General Woodworth presents in his report valuable and interesting statistics concerning the operations of this important service, and adds in an appendix nine papers, written by surgeons of the Marine Hospital Service, upon topics which they had special facilities to observe and investigate, and several of which possess such general importance and interest to commercial men and travelers as to deserve becoming more widely known and to claim the attention of Congress. The report is accompanied by two maps and four diagrams, in illustration of the various subjects.

Second Annual Report of the Inspector and Assayer of Liquors to the Commonwealth of Massachusetts. Boston, 1877. 8vo, pp. 39.

The report of Professor Babcock gives the results of 412 samples of wines and distilled spirits sent for analysis, about one-third of which number was found to be either of very inferior or ordinary quality, or more or less adulterated. Nine samples of ale and lager beer were analyzed and found to contain between 3·55 and 5·02 per cent by weight of alcohol, and between 3·20 (ale) and 7·75 (lager beer) of malt extract, etc. The report enters into the discussion of the manufacture of the liquors and the adulterations, as previously noticed.

Third Annual Report of the State Fish Commissioners of Minnesota, for the fiscal year ending December 31, 1876. St. Paul. 8vo, pp. 14.

We are obliged to Mr. R. O. Sweeney, chairman of the Commission, for this official report.

Year-book of Pharmacy, comprising Abstracts of Papers relating to Pharmacy, Materia Medica and Chemistry, contributed to British and foreign journals, from July 1, 1875, to June 30, 1876, with the Transactions of the British Pharmaceutical Conference at the thirteenth annual meeting, held in Glasgow, September, 1876. London: 1877. 8vo, pp. 640.

The publication of this volume, we regret to say, has been delayed, owing to the illness of its editor. We have noticed the former issues of this valuable annual, and it remains for us merely to state that it presents the same attractive appearance as its predecessors, and that the arrangement is nearly the same as heretofore. The "Year-book" occupies 380 pages, and the "Transactions," including the papers

read, about 170 pages. An account of the meeting will be found on page 473 of our last volume, and since then brief abstracts of several of the papers read have appeared in the "Journal."

There are several matters to which we desire to allude in this connection. A very important one is the creation of a fund, from which grants have been made amounting during the past year to £75, with the view of aiding original investigations. And it must be acknowledged that the money has been well spent Though barely sufficient to cover the cost of the material, it has found its way into the hands of men who devoted their knowledge and time to the investigation of important subjects. At the next meeting of the American Pharmaceutical Association, the nucleus for a similar fund will be presented, and it is to be hoped that it may soon increase to a sufficient amount that those who desire to undertake investigations involving considerable outlay of money may at least be recompensed for this, since neither their labor nor the possible value of the results can be repaid.

The second subject deserving commentation is the long list of faithful members, far outnumbering those of the older Association on this continent. We have alluded to this on former occasions, but we recur to the subject again, and cannot but express our belief that with little effort on the part of each member the roll of membership might be considerably increased Even viewed merely as a matter of dollars and cents, the publications of the British and the American societies are worth by far more than the annual contributions.

The third subject to which we feel constrained to allude is the commendable fact that while the annual income of the British Conference for the first eleven years was merely sufficient for its annual expenditure, the two following years enabled the Conference to report a surplus of about £430, nearly the whole of which was invested in government securities. The American Pharmaceutical Association, we regret to say, cannot show such a sound financial record ; after twenty-five years of its existence, it does, as in the past, meet its liabilities; but it has not been able to lay by a reserve fund. One of the causes is to be found in the stipulation of the old constitution, by which members who had paid ten annual dues became free from further contributions, but still enjoyed all the privileges of full membership; the other cause we have alluded to before: the small number of members, as compared with the large number of intelligent pharmacists.

We congratulate our brethren in Great Britain on their success, and we hope that, in this country, we may profit from their experience

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Official Bulletin of the International Exhibition, Fairmount Park. Philadelphia: 1877 No. 3. Educational Number

The *permanent* international exhibition was formally opened May 10th, and is located in the "Main Building," with which our readers who have visited the Centennial Exposition last year are familiar. The "Bulletin" before us refers to the exhibits relating to educational matters, and contains also a map of the exhibition grounds and a general plan, showing the arrangement of the exhibition. We expect to notice, hereafter, such portions of the exhibition as may be of special interest to our readers.

THE AMERICAN
JOURNAL OF PHARMACY.

JULY, 1877.

EXTRACTION OF CAFFEINA FROM GUARANA.

By Francis V. Greene, M.D., U.S.N.

In determining the percentage of caffeina in guarana, Stenhouse ("Pharm. Jour.," 1st ser., vol. xvi, p. 212, "Amer. Jour. Phar.," 1857, p. 68) employed the following process: The finely powdered substance was boiled for some time with distilled water, the insoluble portion removed by filtration, and a slight excess of basic acetate of lead added to the filtrate. The resulting brownish-red precipitate was thoroughly washed with boiling water, and sulphuretted hydrogen gas passed through the filtered liquid. The sulphide of lead was filtered off, the filtrate evaporated to drynesss on a water bath, and the residue dissolved in a small quantity of boiling alcohol and filtered. On evaporating this liquid nearly to dryness, yellowish crystals were obtained, which, after being pressed between folds of bibulous paper, were dissolved in diluted alcohol. By the evaporation of this menstruum, the crystals of caffeina were obtained perfectly free from color.

In repeating this process for the purpose of estimating the quantity of caffeina contained in a specimen of guarana procured from the Brazilian collection at the Centennial Exhibition, the difficulty of separating the solution from the portion insoluble in boiling water, and the tediousness of the process of washing the mass precipitated by the acetate of lead solution led me to seek some other method by which these impediments might be avoided, and I therefore determined to attempt the separation by means of litharge, which substance has been highly recommended ("Amer. Jour. Pharm.," 1875, p. 135) by Prof. E. S. Wayne, for the extraction of caffeina from tea and coffee. The result, confirmed by several trials of the process, proves that this compound of lead answers equally well for guarana, and that by its employ-

ment the quantitative determination of the caffeina in this substance can be effected with the utmost facility.

The details of the method are as follows: the powdered guarana is intimately mixed with three times its weight of finely divided litharge, and the mixture boiled in distilled water, the ebullition being continued until, on allowing the temperature to fall below the boiling point, the insoluble portion is found to subside rapidly, leaving the supernatant liquid clear, bright, and without color. The quantity of distilled water required will be found to be about a pint for every fifteen grams of the guarana used in the experiment, and, as the boiling has to be continued for several hours before the desired and all-essential separation mentioned above takes place, water must be added from time to time to supply the place of that lost by evaporation. When cool, the clear liquid is decanted upon a filter, and when it has passed through, which it will be found to do with facility, the precipitate is to be transferred to the filter and washed with boiling water, the washing to be continued as long as yellowish precipitates are produced with either phosphomolybdic acid solution, auric or platinic chloride. A stream of sulphuretted hydrogen gas is now passed through the filtrate to remove the small quantity of lead that has been dissolved, and the sulphide thus formed separated by filtration. The solution is evaporated on a water bath to expel the excess of sulphuretted hydrogen, filtered to remove a trace of sulphur, finally evaporated to the crystallizing point, and the caffeina, which crystallizes out on cooling, removed from the mother liquor and pressed between folds of bibulous paper. After being thus treated the crystals will be found to be perfectly white. On diluting the mother liquor with distilled water, filtering and evaporating, a second crop of crystals are obtained, which are also perfectly white, after being pressed as above. The crystals are now dissolved in boiling diluted alcohol, filtered, and the solution set aside to crystallize by spontaneous evaporation. The resulting crystals of caffeina are perfectly pure and colorless.

In order to test the accuracy of the process, fourteen grams of guarana in an impalpable powder were treated with the utmost care, as above described. The extracted caffeina, after drying at 100° F. until the weight became constant, was found to weigh ·707 grams, 5·05 per cent., a remarkably close approximation to the results of Stenhouse,

who, from 25 grams of guarana, obtained 1·260 grams of caffeina = 5·04 per cent., and from 14 grams 5·1 per cent. Average = 5.07.

As this method of extracting caffeina is entirely devoid of all complicated steps, and requires but a short space of time for its completion, it may be used advantageously in estimating the percentage of caffeina in the fluid extract of guarana, which is prescribed to a certain extent at present, and may possibly be more extensively used in the future.

In regard to the proper accentuation of the name of the substance prepared from the seeds of the Paullinia sorbilis, by the Indian tribes on the upper Amazon, I would state that throughout Brazil, and in all parts of South America, where the preparation is used, the word is universally accented on the last syllable, *guaraná*, and never pronounced *guarána*, the popular method of accenting the term in this country. The placing of the accent on the last syllable in words ending in *a* is not at all unusual in the Guarany language; for instance, as regards localities, Paraná and Ceará, retain their Indian accentuation; and in the vegetable world, the Caladium esculentum is always spoken of as the Tajâ or Tayá, the Franciscea uniflora as the Manacá, and the Gomphia parviflora, as the Batiputá.

NOTE ON HYPOPHOSPHITE OF BERBERINA.

By J. U. Lloyd.

Take of	Sulphate of berberina, . . .	1 part
	Distilled water, . . .	24 parts
	Lead monoxide, ...	½ part
	Hypophosphorous acid, . .	q. s.

Dissolve the sulphate of berberina in the distilled water at the temperature of 180°F. Add the lead monoxide, and digest at the above temperature until a filtered portion will not produce a precipitate with solution of acetate of lead (or a hot solution of chloride of barium); from 6 to 12 hours will accomplish this. Filter out the excess of lead and sulphate of lead formed, pass sulphuretted hydrogen through the solution to separate any traces of lead which may remain, and filter again. Evaporate the solution of berberina to the measure of 8 fluidounces, add solution of hypophosphorous acid until in slight excess, and allow the mixture to cool. Separate the magma of fine crystals with a filter paper or muslin strainer, and dry.

Hypophosphite of berberina is a beautiful yellow salt, much more soluble than the muriate.

By substituting other acids for the hypoposphorous almost any salt of berberina can be easily formed. When free from foreign substances, I have failed to find any salt of this alkaloid as soluble in cold water as the berberina itself, but the hypophosphite will dissolve readily to a considerable extent, and is the most desirable form I am acquainted with.

DIALYZED IRON.

By Andrew and H. C. Blair.

This preparation has attracted the attention of many of the pharmacists and medical profession of Europe for some time past, and the experience resulting from its use is so satisfactory, peculiar and wonderful, that it is probably destined soon to become one of our most valued therapeutic agents in a large class of diseases where the ordinary iron preparations are objectionable. "With this preparation," says an author, "we are able now to avoid all inconveniences which arise from the employment of ordinary ferruginous preparations."

Our attention was called to it some months ago through correspondence with a customer residing abroad, who spoke so highly of it, and mentioned such peculiar and wonderful properties it possessed, that led us to inquire more particularly into it. Further correspondence stated that this party had taken it as a remedial agent for a protracted period without the least inconvenience or unpleasant effect, and while under treatment in this country for the same ailment, the ordinary iron preparations were prescribed, but could not be taken for any considerable time without experiencing the common trouble so frequently complained of—headache, constipation, etc. Being interested in the matter, we obtained from a prominent French chemist a formula by which he was in the habit of making it, which is in substance as follows:

Take 10 parts liq. ferri per. chlor. (Br. Ph.), precipitate by aqua ammoniæ and wash the precipitate thoroughly. Mix this with 12 parts of liq. ferri perchlor. (Br. Ph.), and place in a dialyzer. The dialyzer is placed in a suitable vessel with distilled water, the water under it renewed every 24 hours. The operation is continued until no trace of chlorine exists, at which time the preparation is found to be neutral. It usually takes from 12 to 15 days to complete the process.

The resulting preparation is, or should be, of a deep dark-red color, and contains about 5 per cent. of the oxide of iron. As to the chemical condition of the iron in solution, M. Bravais, of Paris (who claims to produce the only genuine), says, "It consists of liquid peroxide of iron, *i. e.*, iron merely united with oxygen and water to the exclusion of all acids;" but it is, no doubt, in fact a neutral solution of an oxychloride of iron in a concentrated form, and the theory of its production is nothing new, and is very simple. The oxychloride (which is the substance retained in solution in the dialyzer) is a colloidal substance. The chloride (which is the principal substance rejected, or washed out as it were) is a crystalloidal substance. These two substances—crystalloid and colloid—are separated by dialysis, the former from the latter by diffusion through a septum, such as parchment paper.

Other formulæ more recently have been suggested, differing somewhat from the above, and it has been the subject of no little discussion abroad as to the particular merits of the one or the other of these. By some it has been suggested to pursue the following formula: Take a given quantity of liq. ferri perchlor. (Br. Ph.), and precipitate by ammonia, wash well the precipitate, and mix with sufficient quantity of the same preparation of liq. ferri perchlor. to saturation, and dialyze. It is remarkable how large a proportion of this freshly precipitated sesquioxide of iron will be taken up or dissolved. For example, the precipitate obtained from one pint of our officinal liquor ferri chlor., representing 3 ounces and 6 drachms of dry oxide, is entirely taken up by about 5 fluidounces of the same liquor. In the magma this precipitate seems a very great quantity, so bulky is it; and, as stated before, it is quite surprising to see it disappear into solution under the influence of so small a quantity of the liquor.

By following the above method, we have found that it shortened the process considerably. It became thoroughly dialyzed in one week, while the other takes about twice that time.

Still another method has been suggested, namely, to take a given quantity of the liquor ferri chlor., and add aqua ammoniæ almost enough to produce the precipitate of the sesquioxide. When the precipitating point is reached the whole solution is placed in the dialyzer. The chloride of ammonium is thus extracted from the solution, and the peroxide of iron, or oxychloride, retained.

If either of these processes is pursued carefully we have found the

same result to be reached. If the solution, after completion of the operation, should contain more than 5 per cent. of iron, it may be diluted with distilled water till it reaches that point. There are some dialyzed irons in market which we have examined, containing no more than from $3\frac{1}{2}$ to 4 per cent. When the preparation has become thoroughly dialyzed, it is tasteless and neutral, the operation should be discontinued, as by further dialysis the liquid is converted into a gelatinous condition.

We may say in closing, that the above formula furnishes an article precisely similar to the original Bravais' Dialyzed Iron, which we have imported and had ample opportunity for comparison. By manufacturing it in this country, it can be produced for about one-half the cost of the imported.

The manner of taking the pure concentrated dialyzed iron is generally in drops, ranging from 15 to 50 daily, in divided doses, on sugar or in sugar and water; suitable vehicles can be used for administration without fear of decomposition. Being without taste and odor, compatible with syrup and alcohol, and communicating no taste to any suitable vehicle, it is easy to construct formulæ for elixir, syrup, etc., a glycerite we find to be an excellent preparation.

These preparations, beside being more acceptable to the delicate palate, are perhaps preferable on account of the dose being brought up to the more popular measure of tea- and tablespoonful, and avoiding the necessity of the patient mixing them with any other liquid before taking.

NOTE ON DIALYZED IRON.

By John M. Maisch.

Dialyzed iron, which will doubtless become one of the most valuable ferruginous medicinal agents, has been recently introduced into the United States, under various names. Some claiming it to be a solution of *oxide of iron* in water, it was, and is still frequently called in Europe, *ferrum oxydatum dialysatum*; but like the very similar preparation, *ferrum oxydatum saccharatum*, which has been made officinal in several European pharmacopœias ("Am. Jour. Phar.," 1873, p. 161; 1874, p. 559), it is nothing more nor less than a very basic oxychloride of iron. To prevent erroneous conceptions concerning its composition gaining a foothold, a brief review of the earlier literature on the subject will not be out of place.

The first paper on this subject deserving notice is one by John M. Ordway, entitled "Examination of the soluble basic sesquisalts," which was published in the "Am. Journal of Science and Arts," 2d ser., xxvi, p. 197 (1858), and in which the following language is used: "Time is a very important element in the production of the highly basic compounds. One may easily be deceived as to when the hydrate ceases to be dissolved, and may set down as opaque that, which by longer digestion becomes quite transparent. By successive steps we get pretty easily as far as $Fe_2Cl_6,11Fe_2O_3$, and in the course of several weeks I have gone as high as $Fe_2Cl_6,23Fe_2O_3$."

The next important paper is by Béchamp (1859), published in "Annales de Chimie et de Physique," 3d ser., lvii, 296, which in the main corroborates the statements of Ordway, but gives the most basic compound obtained Fe_2Cl_6, $20Fe_2O_3$. In both cases the solutions of the normal salt were digested with ferric hydrate.

Th. Graham's celebrated essay on the diffusion of liquids ("Phil. Trans.," 1861, 183) announces the following results: "If recently precipitated ferric hydrate or carbonate of ammonium is added to an aqueous solution of ferric chloride, as long as the precipitates are redissolved, and if the dark-red solution thus obtained, containing from 4 to 5 per cent. of solid matter, is subjected to dialysis, mainly muriatic acid will pass through the septum upon which, after 19 days, remains a red liquid containing for 98·5 parts of oxide 1·5 part of muriatic acid. It remains liquid for 20 days and then gelatinizes, separating ferric hydrate. A similar solution of colloidal ferric hydrate may be obtained by dialysis of ferric acetate, and contains 6 parts of acetic acid to 94 parts of ferric oxide."

Calculating Graham's results as an oxychloride, the formula Fe_2Cl_6, $95Fe_2O_3$ would be obtained, which seems to be hardly probable. At the same time, it must be remembered, that none of the so-called soluble oxide of iron has as yet been obtained free from acid. Graham's figures, I believe, are the lowest thus far observed, and the solution was not permanent, but gelatinized spontaneously. It must therefore be granted that any permanent solution of so-called soluble oxide of iron must contain notable quantities of acid; and within the past year such has been proven by Hager to be the case for several European preparations sold as oxide of iron.

The behavior of these solutions is quite curious and apt to mislead,

unless care be taken to arrive at correct results. They will retain their clearness on boiling, are miscible with alcohol, glycerin, syrup, etc., but readily yield precipitates on the addition of acids not in excess, or of saline solutions, the precipitates disappearing again on diluting with distilled water. Tannin added in small quantities, darkens the solution somewhat, and on filtering leaves but little matter in the funnel; on using a stronger solution of tannin a well diffused gelatinous precipitate takes place, having a deep brown, but not a black color, and the filtrate is colorless. Solution of nitrate of silver added in small quantity does not disturb the transparency of the liquid; on adding more of the former a gelatinous *brown* precipitate takes place, and the colorless filtrate is free from iron, but the addition of distilled water causes the precipitate to dissolve again. Apparently, therefore, the solution is free from chloride; but on adding first a slight excess of ammonia, filtering from the ferric hydrate, acidulating with nitric acid and then testing with nitrate of silver, a white precipitate of chloride of silver is formed. All these reactions as well as the slight astringent, not inky taste, and the intense brown-red color have been observed by the investigators named above, and they characterize also the commercial products. A sample recently handed to us, and said to contain no, or only traces of chlorine, yielded when treated as above, abundant evidence of its presence.

Physicians and pharmacists should, therefore, bear in mind that there is *no soluble oxide of iron*, but what is sold as such, be it imported or made in this country, is *very basic oxychloride of iron*. This being the case, the question naturally presents itself whether such a solution cannot be obtained by saturating a solution of ferric chloride with hydrate of iron. That question is easily answered if the behavior to saline solutions is taken into consideration and the fact is remembered that, when solutions of ferric salts are precipitated by alkalies the ferric hydrate will invariably retain small quantities of the precipitant, which cannot be removed by washing with water. These saline impurities, minute as they may be, are sufficient to prevent the formation of the very basic oxychloride, or if formed it becomes insoluble in the liquid and nothing but dialysis or considerable dilution with distilled water can dissolve it again. To obtain it of the maximum strength indicated by Graham (5 per cent.) and also adopted by the Pharmaceutical Society of Paris (see page 349), dialysis appears to be unavoidable.

As to the advantage of the dialyzed over the oxychloride made by

saturation with hydrate of iron, that is best ascertained by comparing their taste, which in the former is scarcely astringent, while that of the latter is distinctly ferruginous. A preparation now before me, imported from Germany, called Ferrum oxydatum dialysatum, I do not hesitate to say has been made by saturation alone, or by incomplete dialysis; for its reaction is distinctly acid and its taste quite styptic. Some French preparations, sold by the same name, were found to be superior to the German in both respects; but one yielded only 3·3 per cent. of solid matter, another less than half that quantity. A 5 per cent. solution of dialyzed iron should yield 3 grains of dry residue when 60 grains of it are carefully evaporated to complete dryness.

The characteristics of a 5 per cent. solution of dialyzed iron may be stated to be—

1. The deep brown-red color, which in thin layers is perfectly transparent.

2. The freedom from odor and taste, it being merely faintly astringent to the palate.

3. The absence of even slight acid reaction to test-paper; and

4. The behavior to tannin and to saline solutions (even spring water), as stated above.

It is best given by itself upon sugar, or mixed with some simple syrup which is free from acid. It should be mentioned yet that the same preparation has made its appearance in Austria as *catalytic iron.*

EMULSION OF OIL OF TURPENTINE.

BY LOUIS GENOIS.

Emulsionizing oil of turpentine and volatile oils generally is considered a rather difficult operation, and many pharmacists have come to the conclusion that an elegant and somewhat permanent mixture is almost impossible. Various methods have been suggested to overcome the difficulties, but none have been very successful; the latest process I believe is that of Mr. Forbes, published in February, 1872, in the "Amer. Jour. Phar.," and though it is both ingenious and rapid of execution, it hardly affords a satisfactory result. With the view of ascertaining the possibility of finding a substance that would answer the purpose better than anything usually employed, I made a number of experiments with the following: gum tracaganth, dextrin, starch and castile soap.

I found the latter to better possess the properties of a suspending medium than any other, the mixture with it retaining its homogeneousness almost indefinitely, besides it has the advantage of having some similar properties to the turpentine, and would be a valuable adjunct as well as a useful addition in many cases. The smallest proportion that I have found to answer is 10 grains of soap, 1 ounce of oil, to any quantity of water; the soap is to be put into a round bottomed mortar, the oil added by degrees with continual trituration; when well mixed transfer to a bottle, add half an ounce of water, shake vigorously, add a little more water, shake again, and the emulsion is made, is very white, and will not separate on the addition of a gallon or more of water. The soap should be perfectly dry and in very fine powder, otherwise it will not do as well; it is obvious that any other volatile oil can be treated in the same manner, and will afford equally good results.

New Orleans, June 10th, 1877.

THE USE OF GLYCERIN IN FLUID EXTRACTS.

By John Wesley Lehman, Ph.G.

(*From an Inaugural Essay.*)

A number of experiments were made with officinal and unofficinal fluid extracts, with the view of determining the preservative qualities of glycerin in this class of preparations. The results obtained may be tabulated as follows:

Fluid Extract of	Menstruum.	Remarks.
Aconite root,	Alcohol 3 p., glycerin 1 p.,	Dark reddish-brown, after 2 weeks muddy; filtered, became again turbid.
" "	Alcohol,	Of lighter color; remained clear.
Asclepias tuberosa,	Dil. alcohol 3 p., glycerin 1 p.,	Gelatinized in 4 weeks.
" "	Alcohol 2 p., water & glycerin each 1 p.,	Did not gelatinize; slight precipitate.
Buchu,	Alcohol 3 p., glycerin 1 p.,	Dense precipitate in 5 days.
Conium (leaves?),	Officinal,	Dark and clear; slight precipitate in two weeks.
Digitalis,	"	" "
Ergot,	"	" "
Grindelia robusta,	Dil. alcohol 3 p., glycerin 1 p.,	" "
Hyoscyamus,	Officinal,	" "
Krameria,	"	Brown-red; clear.
Prunus Virginiana,	Officinal,	Soon turbid, and considerable precipitate.
" "	Water 8 fl. oz. afterwards glycerin and dilute alcohol equal p.,	Slight precipitate after 4 weeks.
Stramonium,	Officinal,	Dark and clear; slight prec. on standing.
Valeriana,	"	Remains clear.
"	Alcohol 3 p., glycerin 1 p.,	Very muddy in two weeks; filtered, muddy again in one week.
"	Alcohol 8 p., glycerin 1 p.,	Slight precipitate in two weeks; filtered, very slight change afterwards.
Zingiber,	Officinal,	Remains clear.
"	Alcohol, with small prop. of glycerin,	Precipitated some in 5 days.

The author concludes that the use of glycerin in fluid extracts of astringent drugs adds much to the beauty and stability of the prepara-

tion. Its use appears also to be indicated for those drugs the active principles of which are soluble in water and dilute alcohol. In fluid extracts of mucilaginous drugs like pleurisy root it cannot be used to any great extent, and it is best discarded altogether in all cases where the active principle is of a resinous nature.

EXTRACTUM GLYCYRRHIZÆ DEPURATUM AND AMMONIACAL GLYCYRRHIZIN.

By Gustav A. Appenzeller, Ph.G.

From an Inaugural Essay.

The author recommends to dispense in liquid preparations, and more particularly in the officinal Mist. Glycyrrh. comp., the purified extract of liquorice of the German Pharmacopœia in place of powdered liquorice. It is prepared by putting into a suitable vessel alternate layers of straw and commercial liquorice, covering with cold filtered water, drawing off the liquid from time to time and evaporating to the consistence of a thick syrup. It yields a clear solution with water, and an excellent *syrup of liquorice* may be prepared from it by mixing one ounce with a pint of simple syrup.

The following brands of liquorice yielded the amounts of extract [of what consistence?] stated below: Duca di Corigliana 77·24, M. & R. 72·66, P. & S. 61·22, A. & S. 60·91, and Noëly 58·92 per cent. The residues, insoluble in cold water, had a similar appearance, and contained starch.

Ammoniacal glycyrrhizin was prepared according to Roussin, by exhausting the bruised root with little water, boiling the liquid, removing the coagulated albumen, precipitating with hydrochloric acid, washing the precipitate, dissolving in ammonia and drying upon glass, when yellowish scales having the taste of the root were obtained.

By exhausting the root with diluted ammonia water, evaporating and drying on glass, a considerably larger quantity of somewhat darker colored scales were obtained. A similar but still darker colored preparation results if liquorice is treated in the same manner. The scales made from the root are more pleasant in taste, particularly if Russian liquorice root, deprived of the brown cortical layer, is used.

FORMULAS and PREPARATIONS of new MEDICAMENTS.

By the Editor.

In continuation of the formulas discussed and adopted by the Paris Pharmaceutical Society (see p. 233), we select the following:

Solution of sodium phenate (*Phénol sodique.*)—Phenic acid 70 grams, caustic soda 30 grams; water sufficient to make 1 liter.

Syrup of Chloral Hydrate.—Dissolve 50 grams of crystallized chloral hydrate in 950 grams of orange-flower syrup. A tablespoonful (20 grams) contains 1 gram of chloral hydrate.

Tincture of Quillaia.—100 grams of quillaia bark are digested in 500 grams of alcohol in a suitable apparatus, placed in a water-bath, the temperature being maintained near the boiling point for half an hour; the whole is then macerated for 48 hours with occasional agitation and afterwards filtered. The tincture is mainly employed in preparing emulsions of substances insoluble in water, such as *copaiba*, *tar*, *oil of cade*, which are made according to the formula for

Emulsion of Tolu Balsam.—Dissolve 2 grams of balsam of tolu in 10 grams of 90 per cent. alcohol, add 10 grams of tincture of quillaia and mix with 78 grams of hot water.

Preparations of Eucalyptus Globulus.—The infusion, wine, elixir and extract are made from eucalyptus leaves, in the same manner as the corresponding preparations of coca. (see p. 236.)

Water of Eucalyptus.—Distil 1 part of dry eucalyptus leaves with sufficient water to obtain 4 parts of distillate.

Syrup of Eucalyptus.—Infuse 50 grams of eucalyptus leaves for three hours with sufficient water to obtain, after expression and filtration, 250 grams of infusion, add 100 grams of distilled eucalyptus water and dissolve in the liquid 650 grams of sugar, using a covered vessel placed in a water-bath.

Tincture of Physostigma.—Macerate 100 parts of powdered Calabar bean in 500 parts of 80 per cent. alcohol for 10 days; express and filter.

Glycerite of extract of physostigma is made in three different proportions. The alcoholic extract of Calabar bean is well mixed with 10, 20 or 100 times its weight of glycerin and dissolved by the aid of a moderate heat. It should be completely dissolved.

Bromide of Iron.—The solution of this salt does not keep well, and is at once made up into syrup or pills. It is made by using 40 grams of iron filings, 216 grams distilled water and 80 grams bromine, and contains one-third its weight of ferrous bromide.

Pills of Ferrous Bromide.— 15 grams of the preceding solution and 10 grams powdered iron are evaporated in a porcelain capsule, until the water has been driven off; the mass, while still hot, is transferred to a warm mortar, mixed with sufficient powdered gum arabic and licorice root until a mass is obtained, which is divided into 100 pills; they are to be rolled in lycopodium or covered with a mixture of gum and sugar.

Syrup of Ferrous Bromide.—15 grams of the solution are mixed with 985 grams of syrup of gum, flavored with orange-flower water.

Ferrous chloride is made by dissolving iron in hydrochloric acid and evaporating the filtered solution rapidly to dryness.

Syrup of Ferrous Chloride.—Dissolve 5 grams of dry ferrous chloride in 20 grams of orange-flower water, and add 800 grams syrup of gum and 175 grams syrup of orange-flower.

Pills of Ferrous Chloride.—Dry ferrous chloride, powdered marshmallow-root, each 10 grams, mucilage sufficient. Make into 100 pills, which are to be silvered.

Dialyzed Oxide of Iron.—100 grams solution of ferric chloride of 30°B., are mixed in small quantities with 35 grams ammonia water of 22°B. The precipitate dissolves at first rapidly, afterwards very slowly. When the liquid has become transparent it is introduced into a dialysator, and this placed in distilled water, which is to be frequently renewed, until the liquid is no longer precipitated by nitrate of silver and is destitute of acid reaction. It still contains a small quantity of hydrochloric acid, which may be recognized by precipitating with ammonia, acidulating with nitric acid and testing with silver nitrate. 10 cc. of the liquid, which is entirely free from disagreeable ferruginous taste, are evaporated, and from the weighed residue the amount of water is calculated which must be added to obtain a solution containing in 100 cc. 1 gram of solid matter.

Syrup of Ferrous Chlorhydro-phosphate.—Ferrous chloride, medicinal phosphoric acid, of each 5 grams; distilled water 350 grams; sugar 640 grams. Make a syrup.

Syrup of Pyrophosphate of Iron and Sodium.—Dissolve 25 grams of sodium pyrophosphate in 250 grams of distilled water, and 5 grams of dry ferric sulphate in 100 grams of water; add this last to the former solution, and in the clear and colorless liquid dissolve 620 grams of sugar.

The *solutions* of the two last preparations are obtained by omitting the sugar and adding enough distilled water to make 1 liter of solution.

Glycerites of subnitrate of bismuth, of laudanum, of extract of lead and of extract of rhatany are made with 90 parts glycerite of starch by mixing it intimately with 10 parts of subnitrate of bismuth, of Sydenham's Laudanum, of Goulard's Extract, or of extract of rhatany, the latter to be previously dissolved in the smallest possible quantity of glycerin.

Tar Water.—The wood tar should be of a red-brown color, transparent and free from resinous deposits. Mix 5 grams of such tar intimately with 10 grams of pine-wood sawdust, and macerate for 24 hours with 1,000 grams of distilled or rain water, stirring frequently.

Syrup of Tar.—15 grams of tar and 30 grams pine-wood sawdust are mixed, and digested at 60°C. with 1,000 grams water, with occasional agitation. Filter at the end of two hours upon the sugar, 190 grams of which are to be used for every 100 grams of the filtrate, and effect the solution in a closed vessel, heating it by means of a water bath.

Syrup of Iodotannin, *Sirop Iodotannique.*—Dissolve 1 gram of iodine in 11 grams of 90 per cent. alcohol, add to syrup of rhatany (containing 2·5 per cent. of extract of rhatany) 988 grams, and mix well. The combination will be completed at the ordinary temperature in 24 hours, when the syrup has again its original color.

Iodinized syrup of horseradish is made in precisely the same way as the preceding, substituting the same weight of compound syrup of horseradish.

Syrup of Iodide of Starch.—Dissolve 10 grams of soluble iodide of starch in 330 grams of distilled water, and use this solution for dissolving 640 grams of sugar, by the aid of a gentle heat.

Pilocarpina.—The leaves or bark of Pilocarpus pennatifolius are exhausted with 80 per cent. alcohol, containing in the liter 8 grams of hydrochloric acid, and the tincture is distilled and evaporated to the consistency of a liquid extract, which is mixed with a small quantity of

water, and filtered. The filtrate is treated with a slight excess of ammonia, and then with a large quantity of chloroform. The chloroform solution is agitated with water, to which hydrochloric acid is added, drop by drop, in sufficient quantity to neutralize the alkaloid, the hydrochlorate of which is obtained in long needles on evaporating the aqueous solution, while foreign principles remain dissolved in the chloroform. By dissolving the crystals in water, treating the solution with ammonia and chloroform, and evaporating the latter solution, pilocarpina is obtained as a soft viscous mass, which is little soluble in water, but freely soluble in alcohol, ether and chloroform.

Effervescing Carbonate of Lithium.—Take of citric acid 40 grams, bicarbonate of sodium 50 grams, and carbonate of lithium 10 grams. Powder and mix well, then introduce into a wide flat-bottomed dish, and heat to about 100°C. (212°F.), stirring constantly until the powder becomes granular. Separate the granules of uniform size by means of appropriate sieves, and preserve them in well-stopped bottles.

Extract of Malt.—Take of malt, the germ of which has attained two-thirds the length of the grain, dry at 50°C. (122°F.), grind and treat it with two parts of water at the ordinary temperature, stirring the mixture occasionally. After 5 or 6 hours express, strain, filter and evaporate in a shallow dish at a temperature not exceeding 45° C. (113°F.)

Syrup of Narceina.—Dissolve 1 gram of narceina in 100 grams of water, containing ·6 gram hydrochloric acid; add to the solution 250 grams of water, and then dissolve 650 grams of white sugar. Each tablespoonful of 20 grams contains ·02 gram ($\frac{1}{3}$ grain) of narceina.

Pancreatin.—Pancreas is freed from foreign matters, bruised and mixed with water containing some chloroform to prevent decomposition. After some time the mass is expressed and the liquid filtered and evaporated rapidly in shallow dishes by means of a current of air, at a temperature not exceeding 45°C. (113F.) ·10 gram of pancreatin digested with 5 grams of fibrin and 25 grams of water, at a temperature of 50°C. (122°F.) for 12 hours, yields a solution which, when filtered, is scarcely rendered turbid by the addition of nitric acid. ·10 gram of pancreatin, adced to 100 grams of paste containing 5 grams starch, yield a liquid which filters easily and decolorizes 4 times its volume of Fehling's solution.

THE SPIRIT OF NITROUS ETHER OF THE U. S. P., 1870.

BY C. LEWIS DIEHL.

(Read at the Pharmaceutical Meeting of the Louisville College of Pharmacy, held June 7th, 1877.)

About eighteen months ago I had occasion, for the first time, to prepare spirit of nitrous ether by the process of the present "Pharmacopœia." Operating with the pharmacopœial quantities, and observing the care which a considerate experience in the manufacture of this product by the old method had taught me, I obtained results somewhat at variance with the requirements and statements of our standard. I have since had opportunity to confirm the results then obtained, and propose in this paper to discuss these, together with such additional observations as are pertinent to the subject.

The methods which have been proposed from time to time for the preparation of nitrous ether, or its medicinal solutions, differ mainly in the manner in which two principal methods are applied: the one producing nitrous ether by the direct action of nitric acid on alcohol; the other by the direct action of nitrous acid on the same liquid. The first named method is the older one, and is the one that was discarded at the last revision of our "Pharmacopœia." The product of the direct action of nitric acid upon alcohol, irrespective of the modification of the method, always contains, besides nitrous ether, variable quantities of acetic and formic ethers, and aldehyd: the relative quantities of these depending on the temperature, quantities operated on, etc. By the second method—the direct action of nitrous acid on alcohol—nitrous ether is formed, it is claimed, to the exclusion of the other compounds, and this is the method applied in the process of the present "Pharmacopœia." This process, which is practically identical with that of the "British Pharmacopœia," was proposed in 1867, by Professor Theophilus Redwood. In the very interesting paper in which the process is described,[1] Professor Redwood reviews the various methods that have at different times been suggested, and, among these, finds that of E. Kopp for the production of nitrous ether to be, with certain modifications, the one suited to secure uniformly a spirit of definite strength and purity. Kopp's process consists in heating a mixture of equal volumes of nitric acid, sp. gr. 1·36, and rectified

[1] "Phar. Jour. and Trans.," viii, 508; "Am. Jour. Phar.," 1867, 321.

spirit in contact with copper filings, and, when chemical action has commenced, withdrawing the heat and allowing the distillation to go on spontaneously. The process, however, while well suited for the preparation of nitrous ether, is wasteful and, consequently, expensive; while, at the same time, the reaction does not proceed with the desired regularity. After numerous experiments, Professor Redwood found that by the introduction of certain proportions of sulphuric acid, the complete utilization of the nitric acid for the formation of nitrous ether, with a minimum consumption of copper, could be secured, and that the reaction took place with the utmost regularity. The proportions found to work best, and these have been retained without change in the "British Pharmacopœia," are:

Nitric acid, sp. gr. 1·42, . . .	3 fluidounces
Sulphuric acid, sp. gr. 1·843, . .	2 "
Copper, in fine wire (about No. 25), . .	2 ounces
Rectified spirit (for the reaction), . .	20 fluidounces
Rectified spirit (for diluting the distillate), . .	2 pints

Professor Redwood's directions for manipulating these ingredients have been adopted *verbatim* in the "British Pharmacopœia," and our own standard has essentially adopted the same directions; hence it is not necessary to reproduce them here. He further explains, that at a temperature of 150°F. bubbles begin to rise in the liquid in the retort; that these increase to 170°F., when ether begins to form, and that when it reaches 175°F. the reaction proceeds rapidly and steadily until the nitric acid is all expended, without any further rise in temperature if the heat is properly adjusted. The completion of the process is indicated by the dissappearance of the froth—which is caused by chemical reaction, and not by boiling—and the distillate will then amount to *about* 12 fluidounces. The remaining one-half fluidounce of nitric acid is added "for the purpose of converting the undecomposed spirit still in the retort into nitrous ether." The 15 fluidounces of distillate contain 35 per cent. of *crude* ether. When mixed with the remaining two pints of spirit, a product results which has a sp. gr. of 0·845, and when mixed with twice its volume of concentrated solution of chloride of calcium, separates from two to three per cent. of nitrous ether. This indicates ten per cent. of ether [crude?], as eight per cent. remain in solution.

Comparing now the process of the United States with that of the

"British Pharmacopœia," it becomes evident that the changes made were necessary in order to secure a product conforming, as near as possible, with that of the "United States Pharmacopœia" of 1860. These changes at once become evident on consulting the following:

Analytical comparison of the U. S. and Br. Ph. processes for preparing Spirit of Nitrous Ether, to which I shall have occasion to refer in the following pages:

A. *Weights and Measures.*

	British.	United States.
Measures,	Imperial.	Apothecaries'.
Weights,	Avoirdupois.	Troy.

B. *Quality of Ingredients.*

	British.	United States.
Copper,	As wire.	As wire.
Nitric acid,	sp.gr. 1·42 =75 p.ct. $HONO_5$	Same as Br.
Sulphuric acid,	sp.gr. 1·843=96 p.ct. $HOSO_3$	Same as Br.
Alcohol,	sp.gr. 0·838=84 p.ct. $C_4H_6O_2$	sp.gr. 0·817=92 p.ct. $C_4H_6O_2$

C. *Quantity of Ingredients.*

	British.	United States.
Copper,	2 oz.= 875·0 grs.	2 oz.= 960 grs.
Sulphuric acid,	2 f.oz.=1612·6 grs.	3½ oz.=1680 grs.
Nitric acid, 1st portion,	2½ f.oz.=1553 0 grs.	4 oz.=1920 grs.
Nitric acid, 2d portion,	½ f.oz = 310·6 grs.	½ oz.= 240 grs.
Alcohol, for the react'n,	20 f.oz.=7332·5 grs.	20 f.oz.=7445 grs.
Alcohol, for dilution,	40 f.oz.	92 f.oz.

D. *Relation of water to absolute alcohol and monohydrated acids.*

	British.	United Statəs.
Absolute alcohol,	6159·0 grs.	6830·0 grs.
Water from alcohol,	1173·0 grs.	615·0 grs.
Monohydrated nit. acid,	1397·7 grs.	1620·0 grs.
Water from nit. acid,	465·9 grs.	540·0 grs.
Monohydrated sul. acid,	1561·0 grs.	1624 0 grs.
Water from sul. acid,	51·6 grs.	55·7 grs.
Total weight of absol. alc. and monohydrated acids,	9117·7 grs.	10084·0 grs.
Tot'l weight of wat'r,	1690·5 grs.	1210 7 grs.
Total weight of liquids used in the react'n,	10808·2 grs.	11295·0 grs.
Percentage of uncombined water,	15·64 per cent.	10·72 per cent.

E. *Relation of $HONO_5$ to $C_4H_6O_2$ used and consumed in the reaction.*

	British.	United States.
$HONO_5$,	1·0 weight part.	1·0 weight part.
$C_4H_6O_2$, used in the reaction,	4·406 "	4·216 "
$C_4H_6O_2$, consumed by the reaction,	0·730 "	0·730 "
Absolute amount of $C_4H_6O_2$ consumed,	1020·5 grains.	1142·8 grains.

F. *Results according to the standards.*

	British.	United States.
First distillate,	12 fluidounces.	13 fluidounces.
Second distillation,	3 "	2 "
Total distillation,	15 "	15 "
Total spirit,	55 " (more or less.)	107 " (exact.)
Specific gravity of spirit claimed,	0·845	0·837
Percentage of nitrous ether in spirit claimed,	10 per cent.	5 per cent.

G. *Increase in the ponderability of the product over that of the alcohol used.*

	British.	United States.
1000 volumes of alcohol weigh:	838 parts.	817 parts.
1000 volumes of spirit of nitrous ether weigh:	845 parts.	837 parts.
Increase by the introduction of the respective percentages of nit. ether,	7 parts.	20 parts.
Increase for 1 per ct. of nitrous ether,	0·7 parts.	4·0 parts.

H. *Possible quantity of nitrous ether ($C_4H_5ONO_3$) produced by the respective processes.*

	British.	United States.
Absolute quantity by volume,	4·0145 f.oz.	4·469 f.oz.
Absolute quantity by weight, the sp. gr. of nitrous ether being 0·947,	1663·26 grs.	1928·5 grs.
Possible percentage of absolute nitrous ether in the spirit,	7·298 per cent.	4·1766 per cent.

In the course of my experiments numerous questions presented themselves for solution, the most important of which I shall endeavor to answer in the present paper, in the order below given:

1. "Is it possibles, or necessary, to obtain the quantity of distillate required by the 'Pharmacopœia?'"

2. "Is the specific gravity of spirit of nitrous ether, U. S. P., correctly stated?"

3. "Is the percentage of nitrous ether in the spirit of nitrous ether of the U. S. P. correctly stated?"

4. "Is the method of Br. Ph. for determining the percentage of nitrous ether in the spirit of that standard reliable within pharmaceutical limits, and can it be made available for the product of the U. S. P.?"

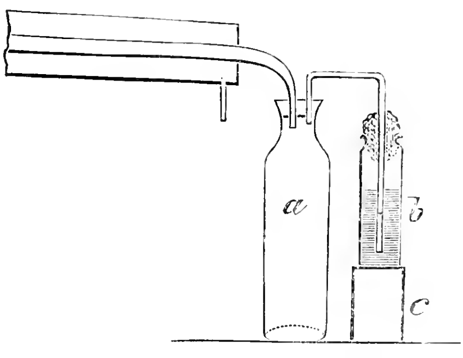
I. Is it possible, or necessary, to obtain the quantity of distillate required by the "Pharmacopœia?"

This question presented itself very forcibly when I prepared spirit of nitrous ether for the first time by the present process. I had conducted the process with extreme precaution, and assured myself that the condensing facilities were within the pharmacopœial requirements; the reaction proceeded with the regularity so characteristic of this process, and proper compensation had been made for the somewhat weaker than officinal acids used. Nevertheless I failed to obtain the quantity of first distillate required, notwithstanding that the heating was continued for some time after the reaction had ceased. On adding the second portion of nitric acid and heating as directed, the additional two fluidounces of distillate were readily obtained, making, with the first portion, a total distillate of a little over 9 fluidounces. But on mixing this with the reserved quantity of stronger alcohol, presented by the "Pharmacopœia," a spirit of nitrous ether was obtained, which corresponded in all its characters to the officinal spirit, with the single exception: that *its specific gravity was* 0·822 instead of 0·837. Not having at the outset any reason to doubt the correctness of the pharmacopœial requirements, this first operation was not conducted as an experiment, and, consequently, no record of temperature, progress of distillation, etc., was kept; but with these results before me, I resolved at the next opportunity to conduct the process experimentally.

First Experimental Distillation.—A slight odor of nitrous ether having

been perceptible in the room during the previous distillation, probably owing to a small opening which had been purposely left in the receiver; in this and the subsequent distillation the receiver was provided with a small glass tube, bent twice at right angles, and dipping into alcohol contained in a vial loosely stopped with cotton and resting on a support a little higher than the column of alcohol. The arrangement is shown in the accompanying cut.

By this arrangement the loss of ether was completely prevented, the temperature of the water flowing through the condenser being 58° F., while the temperature of the room did not exceed 65° F. at any time. The alcohol was of the proper strength (sp. gr. 0·817) and neutral; the nitric acid had the sp. gr. 1·365 (=63·5 per cent. $HONO_5$); the sulphuric acid the sp. gr. 1·830 (=93 per cent. $HO \cdot SO_3$); the copper was in thin sheets, and cut into small pieces. Proper compensation having been made for the weaker acids used, the process was conducted as officinally directed, with this exception, that, for want of time, the mixture of alcohol and sulphuric acid was allowed to stand several days before commencing the distillation.



a. The receiver, rather tall, which is connected, air tight, with a Liebig's condenser.
b. The absorbing bottle, containing a measured quantity of stronger alcohol.
c. The support, the removal of which prevents the return of the contents of the absorbing bottle into the receiver, in case of condensation occurring in the retort by cooling.
a is closed by a cork stopper.
b is closed by cotton.

First Heating. Commenced at 9.30 A.M., temp. 62° F.; commenced to simmer at 9.41 A.M., temp. 143° F.; heat removed when temp. was 152° F.; rose spontaneously to 165° F.; at 10 A. M. temp. commenced to fall, heat again applied; at 10.25 the temp. was 170° F.; at 10.35 the reaction slackened, temp. 176° F., heat increased; at 10.42 the distillate passed, drop by

drop, and the reaction had ceased, temp. 180° F.; the retort was now allowed to cool. *Yield of distillate, $6\frac{5}{8}$ fluidounces.*

Second Heating. Added the reserved portion of nitric acid at 12.35 P.M., temp. 90° F.; commenced to simmer at 140° F.; at 12.57 the temp. was 170° F.; at 1.25 the distillation was ended. *Yield of distillate, 2 fluidounces.*

Into the absorbing bottle 6 fluidounces of alcohol had been placed. After the conclusion of the process this measured $6\frac{7}{8}$ fluidounces, showing an *additional yield of $\frac{7}{8}$ fluidounce*, and making a *total yield of $9\frac{1}{2}$ fluidounces of distillate.*

The reaction proceeded with the utmost regularity, and the end was characterized by the sudden disappearance of the abundant frothy ebullition, followed by gentle simmering for a short time. Upon diluting the distillate with the reserved quantity of stronger alcohol, a spirit was obtained which, like the first, correspond with the officinal requirements in every respect, except in its sp. gr., *which was* 0·8225 *at* 60°F.

Second Experimental Distillation.—It was observed in the previous operations that, after the reaction ceased, if the temperature was maintained at 180°F., distillation would proceed drop by drop. It was therefore resolved in this experiment to continue the heating until the pharmacopœial quantities of distillate had been obtained. It had also been suggested to me that if more sulphuric acid was added after the reaction, an additional quantity of distillate might be readily obtained. For this reason an ounce of sulphuric acid was added after the first heating with the result below indicated. As in the previous operation, the acids were somewhat weaker than officinal in this instance, and correspondingly larger quantities were used. The nitric acid had a sp. gr. of 1·372 (=64·5 per cent., $HONO_5$); the sulphuric acid was of sp. gr. 1·838 (=95 per cent., $HOSO_3$); the alcohol was of sp. gr. 0·817, and neutral; the copper was in thin sheets. With a view of obtaining absolutely true measures, the volume of alcohol necessary was obtained by measures of weight instead of measures of capacity, the fluidounce being taken at 372·216 grains, that of water weighing 455·669 (Pile's average, "U. S. Dispensatory," 13th edit., 1735). The mixture of sulphuric acid and alcohol was made in the evening, and the distillation commenced next morning, the temperature of the room ranging between 60° and 65°F., that of the condensing water being 56°F.

First heating:

11.25	A.M., heat applied to water-bath.	Temperature,	62°	Fahr.
11.47	"	"	100°	"
12.4	P.M., commenced to simmer.	"	150°	"
12.6	" reaction energetic; turned down gas.	"	160°	"
12.10	"	"	168°	"
12.13	" turned gas higher.	"	168°	"
12.23	"	"	170°	"
12.30	"	"	175°	"
12.40	" turned down gas; distillation drop by drop.	"	180°	"
12.50	" allowed to cool.	"	178°	"
1.45	" *amount of distillate* $10\frac{1}{2}$ *fl. oz.*	"	90°	"

Second heating (with one ounce of sulphuric acid added):

2.18	P.M., applied heat.	Temperature,	80°	Fahr.
3.7	" no reaction; distillation drop by drop.	"	180°	"
4.45	" *amount of distillate* 1 *fl. oz.*	"	90°	"

Third heating (with reserved portion of nitric acid):

4.47	P.M., applied heat.	Temperature,	90°	Fahr.
4.55	" commenced to react briskly, and for the first time some vapors passed through absorbing bottle.			
5	" the reaction was over.	"	180°	"
6	" *total distillate* 13 *fl. oz.*			
9.25	" *the requisite quantity of distillate,* 15 *fl. oz., obtained.*			

The 15 fluidounces of distillate, when diluted to the proper volume with stronger alcohol, corresponded in its odor, color and taste, in its relation to litmus, to bicarbonate of potassium, and to heat, in its boiling point, and in its freedom from aldehyd (relation to solution of potassa), to the officinal requirements, but *its sp. gr. was only* 0·825 *at* 60° *F.*

If we now review the foregoing experiments we find that the only deviations from the officinal directions consisted in the use of weaker acids in proportionately larger quantities, and in the substitution of thin sheet-copper for copper wire. By the use of weaker acids, it is true, a portion of water is introduced, but this can have no influence on the reaction if we accept Prof. Redwood's experiments, and consequently the process of the Br. Ph. to be correct, since, in the latter process, the relation of water to monohydrated acids and absolute alcohol is much greater than in the U. S. process (see table D). It is hardly probable that the substitution of thin sheet-copper for copper wire can have any

influence on the reaction, and we must, therefore, look for some other cause for the disparity in the quantity of distillate. This, I now believe, to be owing to the temperature at which the reaction is allowed to take place. It will be noticed that in the first experimental distillation the heat was removed when the thermometer indicated 152°F. This was done because the reaction was quite energetic, as evidenced by abundant frothy ebullition, and because the "Pharmacopœia" directs caution in the application of heat. It was expected that the temperature would rise spontaneously to near the limit designed by the "Pharmacopœia;" but instead it rose only to 165°, and heat had subsequently to be kept up until the reaction was completed.

It the second experimental distillation the heat was never completely removed, but at 160°F. the gas flame heating the water-bath was turned low, upon which the temperature rose to 168°F., and there remained stationary for some time, until the heat was again increased. Now this slight difference in the heating appears to have had a remarkable effect in increasing the volume of distillate; for, while by the first heating of the first experimental distillation only $6\frac{5}{8}$ fluidounces of distillate were obtained, the time required being 1 hour and 12 minutes; the yield of the first heating of the second experimental distillation, time 1 hour and 25 minutes, was about $10\frac{1}{2}$ fluidounces. Furthermore, on consulting the directions of the Br. Ph., it will be observed that the distillation is to be conducted "at a temperature commencing at 170° and rising to 175°, but not exceeding 180°." This rather unfortunately worded direction, can only mean that the heat is to be applied until the temperature reaches 170°, and that it is then to be checked, when it will rise spontaneously to 175°. As Prof. Redwood undoubtedly readily obtained the required quantity of distillate, any disparity in the quantity of distillate must be due to the temperature at which the reaction is allowed to take place, and that this view is correct is further confirmed by the results of Alfred E. Tanner,[1] who, following the process of the Br. Ph., obtained only 11 fluidounces of total distillate; but he had deviated from the officinal directions by distilling "at a temperature commencing at 160°, and rising to 175°."

Mr. Tanner found, however, that the 11 fluidounces of distillate obtained contained the full officinal quantity of nitrous ether, and this

[1] "Am. Jour. Phar.," Feb, 1871, p. 82, from "Phar. Jour. and Trans."

I believe to be true also for the smaller quantities of distillate obtained in my experiments, since the spirits made with them corresponded very closely with the product of the second experimental distillation, and all of them corresponded with the officinal spirit in every character, except specific gravity. The question now properly arises, how or in what manner the temperature affects the volume of distillate without at the same time affecting the quantity of ether? This also permits of easy explanation. In both processes a very large excess of alcohol is used (see tables D and E). The formation of nitrous ether takes place as readily at the lower as at the higher temperature, but at the higher temperature the reaction is more violent, and, being also much nearer the boiling point of alcohol, a relatively larger quantity of the alcohol, not necessary to the reaction, is carried over.

The first question may therefore be answered as follows:

1. *It is possible to obtain the quantity of distillate required by the "Pharmacopœia." Whether this is possible without unnecessarily long-continued heating, as in the instance of the "second experimental distillation," is not decided by the above experiments, but seems probable.*

2. *It is not necessary to obtain the full quantity of distillate required by the "Pharmacopœia." If the reaction takes place at a lower temperature the yield is smaller, but the etherification is complete and the distillate more concentrated than at a higher temperature, at which a correspondingly larger quantity of undecomposed alcohol is carried over with the ether vapor.*

II. Is the specific gravity of spirit of nitrous ether, U. S. P., correctly stated?

The "Pharmacopœia" states that: "Spirit of nitrous ether has a specific gravity of 0·837." On looking over the "Journals," I find that only two experimenters, Oakley Griggs[1] and Geo. W. Kennedy,[2] have recorded the specific gravity of nitrous ether obtained by them since the publication of the present "Pharmacopœia," but neither of them gives the details of the process as carried out. The sp. gr. of Mr. Griggs' product is stated to be 0·834; that of Mr. Kennedy's, 0·835. I have already stated that the three products obtained by me corresponded in all their characters with the officinal requirements, except in their specific gravities: the product of the first distillation

[1] "A. J. Ph.," Oct., 1875, p. 463. [2] *Ibid.*, June, 1876, p. 259.

having the sp. gr. 0·822; of the first "experimental" distillation, 0·8225; of the second "experimental" distillation, 0·825. With these results before me, I naturally began to inquire into the correctness of the pharmacopœial statement, when it soon became evident that, unless great condensation occurs by the solution of nitrous ether in stronger alcohol, the statement of the U. S. P. must be based on error.

The "Pharmacopœia," after giving the specific gravity of the spirit, states that it "contains 5 per cent. of its peculiar ether." Without pausing to consider whether this statement is correct or incorrect, and assuming it to be true for *pure ether*, the question arises, whether the percentage given is meant to be percentage by weight or percentage by volume. Neither the "United States Dispensatory" (13th ed.) nor "Parrish's Pharmacy" (4th ed.) throw any light on this point. The "British Pharmacopœia," however, states of its own preparation: "If it is agitated with twice its volume of saturated solution of chloride of calcium, in a closed tube, 2 per cent. of its original volume will separate in the form of nitrous ether, and rise to the surface of the mixture." It does not say that the preparation should contain 10 per cent. of nitrous ether; but one of the editors of "Pareira's Materia Medica" (abridged ed., 1872), probably Prof. Redwood, commenting on the process, says: "The separation of 2 per cent. of nitrous ether indicates the presence of *about* 10 per cent. of nitrous ether, 8 per cent. remaining dissolved in the mixture." It is, therefore, safe to assume that the U. S. P. intends to indicate volume and not weight per cent.[1]

If, then, spirit of nitrous ether is composed of 5 per cent., by volume, of absolute nitrous ether, sp. gr. 0·947, and 95 per cent., by volume, of stronger alcohol, sp. gr. 0·817, what should be its sp. gr., if no condensation occurs?

5 volumes of nitrous ether, sp. gr. 0·947, weigh	4·735 parts,
95 volumes of stronger alcohol, sp. gr. 0·817, weigh	77·615 parts,
100 volumes of spirit of nitrous ether weigh	82·350 parts,

indicating a specific gravity of 0·8235, which, while totally at variance with the "Pharmacopœia," corresponds very nearly to the specific gravities obtained by me.

[1] Since writing the above I have had opportunity to consult the latest (14th) edition of the "United States Dispensatory," in which (page 1445) I find the following statement: "The sweet spirit of nitre obtained by the old formula was estimated to contain 4 per cent. *in volume* of nitrous ether.

If we now apply the same rule to the product of the "British Pharmacopœia," we obtain results which very nearly correspond to the statement of that standard. In this process rectified spirit of sp. gr. 0·838 (see Table B) is used, while the finished product contains 10 per cent. of nitrous ether and has a specific gravity of 0·845 (see Table F):

10 volumes of nitrous ether, sp. gr. 0·947, weigh	9·47 parts,
90 volumes of rectified spirit, sp. gr. 0·838, weigh	75·42 parts,
100 volumes of spirit of nitrous ether weigh	84·89 parts,

indicating a specific gravity of 0·8489; a result which corresponds sufficiently close when it is considered that the "British Pharmacopœia" does not positively claim 10 per cent. of absolute nitrous ether in its preparation.

It is evident from these results that if the sp. gr. of the British preparation is correct, that of the United States preparation must be wrong; and this becomes more apparent when we review the increase in ponderability over the respective alcohols used in the two processes, as shown in the Table G; for, while 1000 volumes of the British product weigh but 7 parts heavier than the alcohol used for its preparation, being 0·7 parts for each one per cent. of nitrous ether, 1000 volumes of the product of the U. S. P. would, if the sp. gr. is correctly stated, weigh 20 parts heavier than the alcohol used for its preparation, or 4·0 parts for each one per cent. of nitrous ether it is claimed to contain.

It remained then to determine whether any condensation results on the admixture of the distillate in the alcohol. For this purpose the distillate obtained by the second experimental distillation was used. This, which at 60° F. measured 15 fluidounces, and weighed 5974·5 grains, was mixed with 17 fluidounces of stronger alcohol, sp. gr. 0·817, weighing 6328·5 grains. One fluidounce of this mixture, at 60° F., should weigh, if no condensation occurs, 384·5 grains, and by dividing this weight by the weight of a fluidounce of water (455·669 grains) we at once obtain the specific gravity:

455·669 : 384·5 :: 1 : 0·843, *the calculated specific gravity of the concentrated spirit.*

In order to reduce the "concentrated spirit" to the volume required by the "Pharmacopœia," 72 fluidounces of stronger alcohol are required, or 2·34375 fluidounces to 1 fluidounce of "concentrated spirit." The weight of a fluidounce of a mixture so made should, at

60° F., be 376 grains. By dividing this weight by that of a fluidounce of water we again obtain the correct specific gravity, if no condensation has occurred:

455.659 : 376 :: 1 : 0·825, *the calculated specific gravity of the spirit of nitrous ether.*

Upon now taking the specific gravities of these two spirits, by the aid of an accurate 1000-grain bottle, they were found to tally exactly with the calculated specific gravities:

The concentrated spirit, at 60° F., weighed	843 *grains,*
The spirit of nitrous ether, at 60° F., weighed	825 *grains,*

indicating specific gravities respectively of 0·843 and 0·825, and proving that *no condensation occurs when alcohol and nitrous ether (in concentrated solution) are mixed.*

The second question may therefore be answered as follows:

1. *The specific gravity of spirit of nitrous ether, U. S. P., is not correctly stated.*

2. *Its specific gravity, if it contains 5 per cent. of pure nitrous ether, should be* 0·8235.

3. *In the experiments made the specific gravity varied between* 0·822 *and* 0·825.

III. Is the percentage of nitrous ether in the spirit of nitrous ether of the "Pharmacopœia" correctly stated?

The discovery of the error in the pharmacopœial statement of the specific gravity prompted me to inquire into the correctness of the statement of the strength of the spirit of nitrous ether. The "Pharmacopœia" states very positively that it "contains five per cent. of its peculiar ether." In the Table H it has already been foreshadowed that this cannot be true, if by "its peculiar ether" it is meant to designate "absolute nitrous ether," and this is plainly demonstrated by the following calculation:

4½ troyounces (= 2160 grains) of nitric acid, sp. gr. 1·42, contains 1620 grains (= 75 per cent.) $HONO_5$.

63 grains of $HONO_5$ are capable of forming 75 grains of $C_4H_5ONO_3$, and, consequently, 1620 grains of $HONO_5$ can form 1928·5 grains of $C_4H_5ONO_3$.

The specific gravity of absolute nitrous ether is stated to be 0·947; consequently a fluidounce of nitrous ether, at 60°F., will weigh

431·518 grains (water weighing 455·669 grains), and 1928·5 grains of nitrous ether will, therefore, measure 4·469 fluidounces, which, being contained in 107 flouidounces of finished spirit of nitrous ether, gives a *possible quantity* of absolute nitrous ether in the spirit of the U. S. P. of 4·1766 *per cent.*

I am not disposed to quarrel with the revisors of the "Pharmacopœia," but cannot help thinking that a more careful perusal of the original paper of Prof. Redwood would have prevented this error. Speaking of the 15 fluidounces of distillate obtained by the process, Prof. Redwood says[1]: "This product consists of a strong spirituous solution of nitrous ether containing thirtyfive per cent. of *crude ether;*" and further on, when speaking of the finished product: "If it be mixed with twice its volume of a concentrated solution of chloride of calcium, *from two to three per cent.* of nitrous ether will separate and rise to the surface of the liquid. This indicates the presence of ten per cent. of ether, as eight per cent. remains unseparated." In no portion of his paper does Prof. Redwood claim that he has operated with, or obtained, absolute nitrous ether; but, speaking of crude ether in connection with the percentage in the distillate, it is fair to assume that crude ether is also meant when speaking of the percentage separated from, and contained in the finished spirit. Indeed, if the 15 fluidounces of distillate contain 35 per cent. of crude ether, the finished spirit made from it—55 fluidounces—can not contain quite 10 per cent. of crude ether, as is shown by the following calculation:

15 fluidounces of distillate contain 35 per cent., or 5·25 fluidounces of crude ether; consequently this quantity is contained in 55 fluidonnces of the finished spirit. Then

$$55 : 5·25 :: 100 : 9·945,$$

proving that according to Prof. Redwood's own showing the finished spirit can only contain 9·945 per cent. of crude ether.

I do not intend in the present paper to inquire into the composition of "crude nitrous ether," within the meaning of Prof. Redwood, such an inquiry requiring an amount of research for which I have no leisure. It is an established fact, that by any and all methods that have hitherto been proposed, it is extremely difficult to obtain pure and absolute nitrous ether, and it is hardly probable that Prof. Red-

[1] "Am Jour. Phar.," July, 1867, p. 331.

wood's modification of Kopp's process should constitute an exception. To the contrary, I think it probable that small proportions of by-products are formed, and am strengthened in this view by the observation, that the final distillate of the second experimental distillation, passing after the reaction was over, and being colorless, had a decided odor of formic ether.

I would, therefore, answer the third question as follows: 1. *The pharmacopœial statement, that spirit of nitrous ether contains five per cent. of "its peculiar ether" is not correct, if, by "its peculiar ether" absolute nitrous ether is understood.*

2. *Conceding that all of the nitric acid, used in the process, is consumed in forming nitrous ether (and all testimony is in favor of this view), the spirit of nitrous ether of the U. S. P. can not contain more than* 4·1766 *per cent. of absolute nitrous ether*—$C_4H_5ONO_3$.

IV. Is the method of the "British Pharmacopœia," for determining the percentage of nitrous ether in the spirit of that standard reliable within pharmaceutical limits, and can it be made available for the product of the U. S. P.?

In the foregoing it has been shown, that the "Pharmacopœia" is in error in some of its definitions of the character of spirit of nitrous ether, but that as regards the process, it is in the main correct. The only point in regard to the latter that still remains in doubt, as far as my experiments are concerned, is the yield of distillate; and while it seems probable, from what has been said, that the full quantity of distillate can be readily obtained, a final experiment can alone determine this satisfactorily. That the process itself is a good one admits of no doubt. It is readily executed and, if due precautions are observed, all of the nitric acid used is represented in the product as nitrous ether. Nevertheless it is desirable that some controlling test should be applied to the product, since, under ordinary conditions, a portion of ether may be lost, and the spirit become correspondingly deficient. It occured to me, therefore, to determine if the method of the "British Phamacopœia" for determining the strength of its spirit was sufficiently reliable, and, if so, how it could best be applied to the product of our "Pharmacopœia." This method has already been alluded to, and is based upon the fact, that when an alcoholic solution of nitrous ether is

agitated with twice its volume of a concentrated solution of chloride of calcium, a certain portion of ethereal liquid will rise to the surface if the spirit contains over eight per cent. of nitrous ether. Prof. Redwood states that under these circumstances eight per cent. of nitrous ether will remain in solution, but, as I have already had occasion to mention, he evidently means *crude nitrous ether*, *i. e.*, such ether as will rise to the surface of the above mentioned mixture; and that the separated ether is not absolute nitrous ether I have determined by the specific gravities of several samples, separated by the method of the "British Pharmacopœia," which ranged between 8·878 and 0·890.[1] Now, while it has been proved that the spirit of nitrous ether of the U. S. P. can not contain five per cent. of absolute nitrous ether, it seemed more than probable that it might contain five per cent. of such crude ether as is separable under the above-named conditions; and that this is so, is readily shown by the following results, obtained with a portion of the "concentrated spirit"—*i. e.*, the 15 fluidounces of distillate, diluted to 32 fluidounces with stronger alcohol:

1. It was calculated that if the spirit of nitrous ether contained five per cent. of such crude ether, the concentrated spirit should contain 16·82 per cent. On agitating 10 cc. of the concentrated spirit with 20 cc. of saturated solution of chloride of calcium, B. P., 0·85 cc. of ethereal liquid separated, indicating 16·5 per cent. of crude ether.

2. If in the above experiment eight per cent. of crude ether

[1] In the "United States Dispensatory," 13th ed, (1870), p. 1405, after quoting from the "British Pharmacopœia" the volumetric test for determining the strength of its spirit of nitrous ether, the following remarkable statement is made: "This indicates a strength considerably less than that of the U. S. spirit," and on page 1447 of the recent (14th) edition of the same work, this statement is repeated. A careful revision of the work should have prevented the repetition of an error, which a simple comparison of the two processes would have made evident, and which is all the more serious because the work is used as a text-book by beginners.

But the most astonishing error, in this connection, will be found in "Parrish's Treatise on Pharmacy," 4th ed. (1874), p. 373. It is here stated: "The strength of this spirit" (referring to the product of the U. S. P.) "may be ascertained by putting a small quantity in a test-tube, mixing with it double its bulk of a saturated solution of chloride of calcium, and shaking together. If one per cent. of ether rises to the surface, it will be evidence that it contained five per cent, as but one-fifth of the ether is set free by this experiment." The revisor of this work evidently failed to give this subject that careful attention, which a work, designed for students, imperatively demands.

remained in solution, then, upon diluting the concentrated spirit with fractional portions of stronger alcohol, the volume of crude ether separated should be correspondingly reduced. That this is the case is shown in the following table:

Quantity of concentrated spirit used. cc.	Quantity of stronger alcohol added. cc.	Quantity of satur't'd sol. chloride of calcium used cc.	Calculated Results. Volume of crude ether. cc.	Calculated Results. Percentage of crude ether.	Actual Results. Volume of crude ether.	Actual Results. Percentage of crude ether.
10·0	. . .	20·0	0·882	16·82	0·850	16·50
7·5	2·5	20·0	0·437	12·37	0·450	12·50
6·0	4·0	20·0	0·190	9·90	0·200	10·00
5·0	5·0	20·0	0·025	8·25	0·050	8·50

These results are satisfactory evidence that the product of the U. S. P. may contain five per cent. of "crude nitrous ether," and that when a sufficiently concentrated alcoholic solution of nitrous ether is agitated with two volumes of saturated solution of chloride of calcium, B. P., eight per cent. of such crude ether as is separated from the surface remains in solution. It becomes evident, also, that if the distillate of the U. S. P. is not diluted beyond one-half of the full quantity of spirit intended to be obtained, the method may be applied to secure a uniform product.

There remained one other point to be determined in connection with the test of the Br. Ph., *i. e.*, in what respect any accidental deviation in the strength of the solution of chloride of calcium may affect the result. The well-known hygroscopic character of chloride of calcium, and the tenacity with which it retains water, make it difficult to obtain and retain the salt uniformly of the same composition. The Br. Ph. states that chloride of calcium "may be formed by neutralizing hydrochloric acid with carbonate of lime, adding a little solution of chlorinated lime and slaked lime to the solution, filtering, evaporating until it becomes solid, and finally drying the salt at about 400°." Four ounces (avoir.) of this salt, dissolved in five fluid ounces (Imp. meas.) of distilled water, constitute the saturated solution of chloride of calcium of the Br. Ph. It is evident, that according to the greater or less care observed in the preparation and preservation of the salt, the solution will vary in the absolute quantity of CaCl contained in it, and,

since the process can be of value, and is likely to be applied generally only, if it can be conducted with ordinary skill and care, it seemed desirable to determine in what respect fractional dilutions of the solution, beyond those likely to occur from the causes named, would influence the test. Accordingly, separate portions of "concentrated spirit" were agitated with solution of chloride of calcium, which had been diluted with different proportions of water, the results being shown in the following table:

Quantity of sat. sol. CaCl. used. cc.	Quantity of water added. cc.	Quantity of concentrated spirit used. cc.	Volume of crude ether separated. cc.	Percentage of crude ether indicated.
20·0	. . .	10 0	0·85	16·5
17·5	2·5	10·0	0.90	17·0
15·0	5·0	10·0	0·95	17·5
10·0	10·0	10·0	1·05	18·5

It will be observed that a dilution of the saturated solution of chloride of calcium has the effect of increasing the quantity of crude ether separated, an effect which, while not anticipated, is easily accounted for by the sparing solubility of nitrous ether in water. It is remarkable, also, that the increase in the quantity of ether separated is in direct and regular proportion to the degree of dilution, being 0·5 per cent. for each 12·5 per cent. of water introduced. When we take into consideration, however, that an error of 0·5 per cent. in a concentrated spirit of the above strength would be reduced to an error of 0·117 per cent. for the finished spirit, we may safely conclude that the trifling quantity of water introduced by a possible variation in the chloride of calcium prepared with ordinary care, cannot in any way affect the test.

In reply to the fourth question I would therefore say:

1. *The method of the "British Pharmacopœia" for determining the strength of its spirit of nitrous ether is correct and reliable, if by the percentage of nitrous ether indicated such "crude ether" is understood as will separate upon the application of the test.*

2. *The test is not materially affected by a slight variation in the strength of the saturated solution of chloride of calcium so called; but if the solution*

is unduly dilute, the volume of "crude ether" separated is increased 0·5 *per cent. for each* 12·5 *per cent. of water present in excess.*

3. *The method of the "British Pharmacopœia" can be applied to the product of the U. S. P., and will secure uniform results. To this end the distillate is brought to measure not over one-half the expected quantity of spirit* (32 *fluidounces is a convenient quantity*)*; this is tested according to the directions of "British Pharmacopœia," and is then further diluted with* 19 *volumes of stronger alcohol for each* 1 *volume indicated in excess of five per cent.*

At a future distillation it will be my aim to repeat some of the foregoing experiments, and especially to determine whether rapid heating to 170° F. will insure the full quantity of distillate required by the "Pharmacopœia" without inconveniently prolonged heating.

Louisville, June, 1877.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Elixir of Monobromated Camphor.—J. Munday has modified his previous formula (see p. 176), because the glycerin has not sufficient sweetening properties to overcome the nauseous taste. He now proposes to mix spirit of cinnamon (1 in 50) ℨxv, red elixir (Amer. Phar. Assoc.) ℨxx and syrup q. s., to make ℥v, and dissolve, by the aid of a water-bath, monobromated camphor ℈i. Each half-ounce contains 2 grains.

Elixir Camphoræ Monobromatæ Comp., which is often prescribed in Paris, is made by dissolving butylchloral gr. iii in spir. cinnamon ℥iss, mixing the solution with tinct. gelsemium ♏x, red elixir ℨiss and sufficient syrup to make ℥ss, and dissolving therein 2 grains of monobromated camphor.—*Phar. Jour. and Trans.*, April 7.

Chrysophanic acid ointment has been recommended by Mr. Balm. Squire, in place of Goa powder, in the treatment of ringworm, psoriasis and other skin diseases. To prepare it, he recommends to dissolve 2 drachms of the acid and 1 oz. of lard in the smallest necessary quantity of benzol, using a small beaker, placed in a water-bath, and when the solution has been effected, to promptly transfer it to an evaporating dish placed in cold water, stirring briskly until the solution has become fully and firmly "set"; the benzol evaporates readily, and a uniform

and smooth ointment is obtained, entirely free from grittiness.—*Ibid.*, Dec. 16, 1876.

Antihydropin is the name given by Dr. Bogamolow to a crystalline principle which he obtained from cockroaches, *Blatta orientalis*, L., and which he has used with success in six cases of dropsy, for which the cockroaches in Russia are valued as a popular remedy. Dr. Bogamolow has used them in the form of powder, tincture and decoction, and observed that the quantity of urine is augmented, and albumen, if present, decreased; the œdema of hands, feet and face subsides rapidly, the weight of the body is diminished and perspiration increased. The remedy does not disturb digestion, nor, like cantharides, irritate the kidneys.—*Phar. Zeitsch. f. Russl.*, 1876, p. 689.

Hashish of Central Asia, according to Dr. Preobraschensky, is met with in the bazaars of the larger towns in the form of flat cakes 5 to 15 inches long, 5 to 10 inches wide and 1 to 3 inches thick, is externally dark-brown, internally greenish or brownish, hard and tough, breaks with difficulty, but may be readily cut into thin pieces, particularly after being warmed. The resin is collected in the spring from the flowering tops, and kneaded with sand and water into a plastic mass, which is dried upon a clay floor until just hard enough to be cut into cakes. These are called *nasha* by the Bucharians, and *hashish* by the Russians, and are exported from Bucharia to Chiwa, Tashkent, Kokant and other places.

The author has subjected this hashish to an analysis, in the course of which he obtained resin of a balsamic tolu-like odor, a portion of which is insoluble in water; a colorless volatile oil of a camphoraceous and terebinthinate odor, and a warm and, at the same time, cooling, aromatic and bitterish taste; and a volatile alkaloid, which in odor, taste, the crystallization of the salts, and in its reactions with platinic chloride and Mayer's test, corresponds with *nicotina.* By titration with sulphuric acid, amounts of nicotina varying between ·0106 and ·02223 gram for 100 grams of hashish were found. By incineration, hashish yielded 50 per cent. of ashes.

Nicotina was also obtained from the tops of Indian hemp.—*Ph. Zeitschr. Russl.*, 1876, p. 705–714.

Volatility of Glycerin and Nitroglycerin.—Hager has found (1875) that glycerin volatilizes slowly at the ordinary temperature when

it is exposed to a dry atmosphere in thin layers or mixed with a bulky powder. Hess reports a similar observation for nitroglycerin. He found in 1871 a dynamit to contain 72·98 per cent., but after having been kept for five years, only 69·36 per cent. of nitroglycerin.—*Phar. Centralhalle*, No. 12.

To Remove Odorous Compounds from Mortars, Glassware, etc.—Schneider recommends to wash them with ground mustard and some water. A. Huber finds that ground flaxseed, almonds and other oily seeds have the same effect. The odor of musk, valerian, phenol, etc., is thereby readily removed. A little hot benne or olive oil is very serviceable for the cleaning of fish-oil bottles.—*Schweiz. Wochenschr*, No. 13.

Use of Clothes Wringers in place of Presses.—E. Dietrich states in "Apotheker Zeitung" that he has been using cloth wringers for over a year and prefers them to the presses usually employed, in which the margin of the presscake always retains a portion of the liquid. By straining tinctures, infusions, decoctions, etc., through a bag, and passing the latter through the wringer, all the liquid will be easily separated, without coming in contact with the hands. Pulp of tamarind, etc., may be rapidly made and with the use of little water, by passing the material first through a coarse hair sieve, and afterwards, enclosed in a suitable bag, through the wringer.

Modified Percolator.—Mr. B. S. Proctor suggests the addition to the usual cylindrical tube and receiver, of a cylinder of tin plate or other suitable material, closed at both ends, fitting loosely within the percolation tube, the object being to get a slightly increased hydrostatic pressure with a small quantity of the solvent. The cylinder floats in the liquid, and the space besween it and the percolator being narrow, a head of 6 or 8 inches is obtained with a small quantity of liquid.—*Phar. Jour. and Trans.*, Feb. 3.

Caustic soda containing oxide of zinc has been observed by J. J. J. Kyle. The article, which was marked "chemically pure," had been obtained from a Paris manufacturer. On passing sulphuretted hydrogen through the solution with the view of converting it into sulphide of sodium, a white precipitate was obtained, which proved to be sulphide of zinc. It had been, probably, prepared by Hunt's process from sulphide of sodium and oxide of zinc with too large a

quantity of the latter, so that the soluble compound of soda and oxide of zinc was formed.—*Revista farmac.* (*Buenos-Aires*), Feb.

Impure Acid Sulphite of Sodium.—Of six samples of this salt sold as being "pure for analysis," W. F. K. Stock has found five to contain different and notable quantities of hyposulphite.—*Chem. News*, March 29.

Iodide of Starch as an Antidote to Poisons.—Dr. Bellini has read a paper before the Medical Society of Florence, Italy, in which he recommends iodide of starch as an antidote which admits of very general application in cases of poisoning, more particularly when the result of alkalies, alkaline or earthy sulphurets, or of alkaloids. The preparation is easily administered in large doses, has not the irritating properties of free iodine, and readily forms with the substances named either harmless or insoluble compounds. To avoid the subsequent decomposition of the latter, its administration may be followed by an emetic.—*Rép. de Phar.*, 1877, p. 17.

Protiodide of Mercury.—Mr. Le Canu, of Caen, recommends to prepare mercurous iodide by triturating 5 grams of mercury with about 20 drops of alcohol until the mercury is finely divided, adding, if necessary, a little alcohol to replace that which may have evaporated. Three grams of iodine are now added, in small portions, and the whole triturated as rapidly as possible. The finely divided mercury rapidly combines with the iodine, any biniodide formed is almost instantly reduced, and at the end of 10 to 20 minutes a very pure mercurous iodide is obtained without the necessity of washing with alcohol.—*Ibid.*, 139—141.

Lunar caustic is occasionally ordered by physicians, diluted with a certain amount of potassium nitrate, also in sticks of a given diameter. Where metallic moulds are not available, they may be substituted by a hollow cylinder made of parchment paper, with the edges secured by means of mucilage. These moulds may be placed into an ordinary test tube, and when the mass has solidified, the paper may be removed, the stick being quite white.—*Schweiz. Wochenschr. f. Phar.*, No. 7.

A. Huber draws the fused mass carefully into glass tubes of the proper diameter, so as to avoid the formation of air cavities; after the mass has solidified, the glass tube is heated over a spirit or gas lamp,

until the surface of the silver salt becomes soft, when the stick may be easily pushed out with a wire.—*Ibid.*, 13.

Mich. Schlesinger did not succeed with parchment paper, which took fire, (was the fused mass too hot?)—*Phar. Centralhalle*, No. 14.

Preparation of Pyroxylon.—To obtain gun cotton perfectly soluble in ether, Mr. Goddefroy recommends a mixture of 20 parts of sulphuric acid and 10 parts of potassium nitrate, into which at a temperature of 56°C (132·8°F.) 1 part of cotton is introduced and kept for seven minutes. The cotton should be previously freed from fat by boiling with solution of sodium carbonate containing a little potassa, and afterwards washing with water.—*Zeitschr. Oest. Apoth.Ver.*, No. 13.

NOTES ON THE PERMANENT EXHIBITION.

By the Editor.

I.

The main building of the Centennial Exposition has been arranged to accommodate the permanent international exhibition; though the latter cannot be expected to rival the former in splendor and variety, yet it contains so much of interest to the pharmacist, druggist and physician, that a visit cannot fail to be instructive. We propose to publish notes on such articles as may be considered interesting to our readers, and as occasion offers, to refer also to similar articles which were on exhibition last year, with the view of rendering the account more complete.

Passing in through the western entrance, the eye is attracted on the north side of the nave by diverse collections of spices and manufactures in which they are used. Among them we find the fruit of *Theobroma Cacao*, Lin., and also imitations of the same in chocolate. The tree and several closely allied species or varieties are natives of Central and South America, where they have been in cultivation at the time of the discovery of this continent. At present, not only has this culture been very materially extended, but the tree has also been introduced to the eastern hemisphere and is successfully cultivated in Liberia, Mauritius, the Seychelles and Java. In this connection we wish to refer to a work which was on exhibition last year, and though specially addressed to women, deserves to be more widely known, containing as it does, beautiful folio plates in chromo-lithography of Theobroma cacao, Musa paradisiaca, Mangifera indica, Garcinia mangostana, Butea frondosa, Anacardium occidentale and other well-known plants; the work is entitled "Fleurs, fruits et feuillages choisis de la flore et de la pomone de l'île de Java; par Madame Berthe Hoola van Nooten." It was published at Brussels, 1866, with the text in the English and French languages.

The preparation of the seed, the so-called chocolate nut, for the market requires much attention. The large indehiscent capsular fruit is collected when nearly or quite ripe, the seeds are carefully removed from a sweetish pulp and examined with the view of rejecting the unsound; they are then placed in heaps for a few days to

undergo a kind of fermentation, whereby the flavor is improved and the germinating power destroyed. In many places it is customary to put the fresh seeds into baskets or barrels and bury them in the ground for several days, whereby they acquire a deeper brown color and lose their harsh and bitter taste. Fruits which are not fully matured are not opened until after they have ripened by being placed in heaps and covered with leaves. The seeds prepared as stated are then rapidly dried in the sun or by artificial heat. The variations of the soil and climate, and the different modes of treatment, influence the size, color and other physical characters of the seeds, and to some extent also the formation of the fixed oils and other chemical constituents.

The varieties now on exhibition comprise mainly cacao from Trinidad, Caracas, Maracaibo and Liberia. At the Centennial Exposition Venezuela alone exhibited no less than twenty kinds of cacao, all of which probably appear in commerce only as five or six varieties, of which the three first named are perhaps the most important; nearly all the other cacao-producing countries had likewise sent specimens. We learned that its cultivation, though profitable, has of late years been neglected in Jamaica, so that now only about 600 cwt. are exported; on the other hand, it appears to be on the increase in Bahia, Amazonas, Para, Maranhao and other provinces of Brazil, but is not yet important enough as that cacao could be classed among the *principal* products of exportation from that country. The yield of cacao in Para is stated by Dr. Moreira for 1,000 trees, which can be taken care of by one man, to be annually 70 arrobas (of 32 lbs. each), and to continue for about 80 years. These figures are probably too high for an average; an annual yield of 50 arrobas and a productiveness for 40 or 50 years appear to be nearer correct. The rind of the fruit is said to be rich in potash and the ash to be available for soap-making. The pulp surrounding the seeds is used for preparing a refreshing drink, and also a kind of rum.

Cacao seeds have a brittle testa, which encloses an embryo of the same shape as the seed, and consists mainly of two large cotyledons, which are penetrated by the irregular projecting folds of the inner seed-coat, so that they readily break into angular pieces. The interesting alkaloid, *theobromina*, is contained not only in the kernel, but also in the shell (testa), which is used in a similar manner as coffee. The former is the seat of the *cacao-butter*, of which it contains between 38 and 51 per cent., and which melts at about 90°F (see p. 237). It is obtained as a by-product in the preparation of *cocoa* (more properly called *cacao*) and *chocolate*. The former is mainly the ground seeds, freed from their fixed oil by warm pressure; the latter is the seeds partially deprived of the oil, and made into a uniform paste with or without the addition of sugar, for the cheaper qualities, also, with farinaceous substances and animal fats, and variously flavored; the most delicate and generally acceptable flavor for chocolate is furnished by vanilla.

Vanilla is the fruit of *Vanilla planifolia*, Andr., a climbing orchidaceous plant, indigenous to Eastern Mexico, where, as well as in some other tropical countries, it is cultivated. The fruit is collected when the green color begins to change, and by subjecting them to a kind of sweating process the characteristic dark-brown color and delicate aroma is developed. The kind most highly esteemed in the United

States comes from Mexico; it is generally prefered to the Bourbon vanilla, which is usually covered with a crystalline efflorescence of *vanillin*, but has an odor reminding somewhat of Tonka. Vanilla is also produced at the Seychelles, to what extent we have not learned. The fruit resembles that of Mexico, but is considerably thinner. The vanilla of Costa Rica likewise resembles the Mexican, but is less attenuated at the ends, and like the Venezuelan vanilla, which is not over 4 inches long, has a decided flavor of tonka. Whether Vanilla pompona is also cultivated in Venezuela we cannot say, but a vanilla resembling the fruit of that species was lately offered as Laguayra vanilla. As grown in its native country, Brazil, it is nearly an inch broad, fleshy and of an inferior odor as compared with the best commercial varieties. The vanilla of Peru is probably from the same species, but when dry is of the thickness of a finger, and 6 or 7 inches long. The culture of vanilla in Jamaica has as yet not been attempted on a sufficiently extensive scale. To what extent the use of vanilla may be interfered with by the artificial production of vanillin from coniferin remains to be seen. That which was exhibited last year by Dr. Haarmann had a very fine flavor, which, in our estimation, resembled Bourbon vanilla rather than the Mexican.

VARIETIES.

The Mineral Waters of Greece.—There are few countries in Europe as rich in mineral waters as Greece. Very excellent thermal springs are found at Aidipso, in the island of Eubœa, and at Thermopyles, both of which were known in ancient times as Heraclian's warm waters. Warm springs are also found in the islands of Thermia and Kythnos, and springs of different compositions are met with in Mylos and Santorin. The Peloponnesus and Akarnania are likewise not deficient in these treasures. The hot saline springs of Lutraki, near Corinth, known from the remotest period, and the theiothermæ, or sulphur springs, being located in the former, while the latter has the far grander sulphur springs of Hypate.

It is to be regretted that at nearly all these places there are no establishments offering the desirable comfort to induce foreigners to visit the excellent springs of this classical country; not only the warm, but also the cold, which are found in various sections, and among which may be enumerated the many possessing aperient and purgative properties, and the lithontriptic waters of a monastery, near Hydra. The latter are alkaline, and have proved effectual in many cases of gravel and stone.

Marble.—One of the most important minerals of Greece, in ancient and modern times, is the white marble of the Pelikon Mountains, not far from Athens. Nearly all the ancient temples, the admirable Parthenon, the Propylæa and hundreds of statues were made of this marble, which has also furnished the material for the new Academy, the University and many palaces of modern Athens, as well as for numerous ornaments.

An excellent white marble, though difficult to transport, is also obtained from the island of Paxos. It was employed by Phidias and Praxiteles for their famous

sculptures, and was called Lychnites lithos, from λυχνος, a light or lamp, some authors asserting that the name was applied to it because it had to be quarried with the aid of lamps.

In many other places of Greece valuable marbles are found, of white, green, red, black and other colors.

Use of Sulphur.—Some years ago an argillaceous lamp, similar to those contained in ancient tombs, was found in the Akropolis, near the Parthenon. It had a wick of asbestos inserted in a substance, the nature of which was not difficult to tell, it being sulphur and had evidently been melted and ignited by the wick for making fumigations in honor of Minerva.

It is singular that the Greek name for brimstone is *theion*, while God is *theos*, and so the name of brimstone, *theion* signifies divine, godly.

In another lamp I have found a mass which consisted of different resinous substances, such as labdanum, myrrh, olibanum and storax, materials which were generally used for making the so-called urnresin.

Ancient Colors.—The inalterableness of the colors of the ancient Greeks has always attracted the attention of scientific men. From chemical investigations made a number of years ago, I am convinced that all these colors are of mineral origin. Red ocher, red lead and vermillion were the principal red colors, and the latter was prepared artifically by Kallias, of Athens, in the 92 Olympiade. The white colors consisted of carbonate of lead, a white argillaceous mineral from the island of Mylos, and sometimes of chalk. The blue and green colors contained copper and were made by the aid of vinegar, wine must and salt. Bone charcoal was often used for pictures on account of its agreeable shade; wood charcoal was likewise employed. The yellow colors were mainly ocher and yellow oxide of lead The gilding of marble and other objects was well known to the ancient Greeks, and was effected upon metals by the aid of mercury, and upon other articles by means of the white of eggs and of sarcocolla, the *gummy* matter obtained from Penæa mucronata.

Emery and Mirrors.—Emery, *smyris* of the Greek, was called Naxine pulvis, powder of Naxos, by the Romans, who obtained the mineral from that island. It has been found in ancient tombs usually contained in clay vessels, and was doubtless used for polishing the mirrors of which two or three are often found in the tombs of women. These mirrors were made of copper, round or oval, and often had two holes for hanging them up.

For the Destruction of Earth Worms gardeners and others used the decoction of the extremely bitter species of Lupinus, together with the leaves of the oleander and of tobacco, principally of Nicotiana rustica. By using this liquid in watering, the worms are either destroyed or else they descend deeper into the ground, while the useful plants, such as the artichoke, lettuce, radish, etc., are not affected, nor do they absorb the bitterness.

Diseases of Plants.—From the accounts of the ancient writers it seems that the most frequently observed disease was the smut, or dust-brand, which is due to the appearance of a small fungus, Uredo segetum, and was described by Plinius under the name of Ustilago rustica.

Similar diseases are the rust (rubigo), which was called *erysibe*, or *erydibe*, and another appearing upon fruit-bearing trees called *epachnion*, and against all these visitations Apollo and Demeter (Ceres) were implored; hence their names Apollon erysibios and Demeter erysibie.

A very annoying disease appears in Greece upon the fig trees, and frequently not only the fruit, but all branches are found covered with insects which cause the immature fruit to drop off and thus become useless.

The above miscellaneous notes were furnished by Prof. X. Landerer, Athens, Greece.

MINUTES OF THE PHARMACEUTICAL MEETING.

The last pharmaceutical meeting was held on May 15th, 1877, A. P. Brown in the chair. The minutes of the previous meeting were read and approved.

The following publications were donated to the Library: Year-Book of Pharmacy and Transactions of the British Pharmaceutical Conference for 1876; Report of the Jamaica Collection of Products at the International Exhibition, 1876; Report of the State Board of Pharmacy of Rhode Island and Providence Plantations, 1877. From Wallace Procter, 80 volumes of various publications. From Prof. Bridges, 9 volumes Annuaire de Therapeutique.

Donations to the Cabinet: From Prof. Maisch, a specimen of Eryodiction Californicum. From Charles Dodson, of Frederick Brown & Co., a drawing of Larinus maculatus, a beetle, and specimens of the cocoons called, in Persia, *trehala*, and the peculiar sugar *trehalose* contained therein, to the amount of 28·9 per cent., and identical with or closely related to mycose of ergot.

From Jos. Harrop, two samples of subnitrate of bismuth, one of cream of tartar, an iron mortar, and several graduated measures, fractured at the base.

P. P. Fox stated that he made use of such measures by standing them erect in a flat tin box, and filling in around the base with plaster Paris.

P. P. Fox read a paper on Tincture of Kino, which will not gelatinize (see page 299), which lead to some remarks concerning the use, for the same purpose, of a stronger alcohol than directed by the "Pharmacopœia."

C. L. Mitchell exhibited *soluble medicated bougies*, made of gelatin with 10 per cent of glycerin, and medicated with 2 and 3 per cent. of some metallic salts and narcotic extracts; they are introduced under the name of Porte remède, and are intended to replace injections in the treatment of urethral diseases. Many advantages are claimed for this method of medication, which was introduced by M. Regnal, of France, and afterwards patented by certain parties in this country. A similar mass has been previously used for making suppositories and pessaries.

T. S. Wiegand presented a filter support, of galvanized wire gauze. James Kemble utilized broken rubber funnels for this purpose, by piercing them in numerous places with a hot iron. E. M. Boring thought it objectionable to use galvanized iron for some purposes; he presented a sample of colchicum root obtained in this market, the quality of which was very good, none of the pieces being discolored; also 10 oz. of fixed oil of ergot, obtained as a first percolate in making 64 oz. fluid extract of ergot, U. S. P., 1860. Similar observations had been made by other members, and it was supposed to be due to the ergot having been carefully ground at a low temperature. It was stated that the oil obtained in making the fluid extract as ordered in the "British Pharmacopœia," by previously treating with ether, is known commercially as etherial extract.

A. W. Miller exhibited samples of fluid extracts made by Spencer Thomas' process, viz., maceration and expression (see "Am. Jour. Phar.," 1865, p. 81, and 1866, p. 218); also the first, second and third expressions from buchu, and the exhausted drug, which had scarcely any odor and was practically devoid of taste.

Prof. Remington spoke of the prejudice brought about by the advertisements of manufacturers in not using heat in these preparations. He thought few could be found so good as those carefully made in the store. Prof. Maisch also thought the injurious effects of a carefully regulated heat had been much over-rated.

The preservation of drugs was commented upon. For many that contain no volatile matter, paper is preferable to tightly sealed receptacles, also for effervescing powders; and A. W. Miller had found a dry cellar best for fish sounds and dried huckleberries.

Prof. Remington had been spoken to upon the subjects of uniformity in pricing prescriptions and other methods of assisting each other in business matters, and hoped members would consider the matter and, if possible, agree upon a plan to accomplish the object.

William McIntyre exhibited quinia pills made by the method of H. P. Reynolds ("Am. Jour. Phar.," 1874, p. 404), also pills of sulphate of cinchonidia made by the same process, which is also well adapted to this article.

The meeting then adjourned to October 16th, 1877.

William McIntyre, Registrar.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

American Pharmaceutical Association.—The Local Secretary, Mr. Henry J. Rose, informs us that the meeting will be held in the City Council Chamber, which the Mayor of Toronto has kindly placed at the disposal of the Local Committee. It is desired that suitable goods from the United States be sent for the exhibition of pharmaceutical objects, to be held at the same time. Application has been made to the Secretary of the Treasury, and his official reply states "that the law (section 2505 R. S.) admits to free entry articles, *the growth, produce or manufacture of the United States* when returned in the same condition as exported, and when their identity is established by proof prescribed by the Secretary of the Treasury." It

is hoped that many will avail themselves of this provision, and exhibit goods of the above description, in addition to those which may be shown by our Canadian friends. Goods from the United States, for the above purpose, will enter Canada in bond. The Permanent Secretary expects soon to be in possession of the necessary details for facilitating the exportation and re-importation of these goods, and will communicate them by circular to all who may desire to exhibit. It is desirable that application for space be made to the Local Secretary, Mr. Henry J. Rose, Toronto, *as early as possible* before August 15th.

We are also informed that the Grand Trunk Railway will issue round-trip tickets from any station on their line to Toronto and return at one and one-third ($1\frac{1}{3}$) fare. For many members Niagara Falls will be the natural place of rendezvous on Saturday and Sunday preceding the meeting. Some members have expressed a desire to return by way of Montreal, Lake Champlain and Saratoga, others by way of Montreal and Boston. Those returning by way of Niagara can obtain tickets between that place and Toronto, by boat across Lake Ontario, at $3.00 for the round trip. Other arrangements are contemplated, and due notice will be given. Any suggestions in regard to the trip will be gladly received by the Secretary, who requests all candidates for membership to mail their applications to him or to the Chairman of the Executive Committee at as early a date as possible.

Louisville College of Pharmacy.—The following-named gentlemen having passed a successful examination at the end of the session, were by the Board of Directors declared Graduates in Pharmacy, viz.: Otto E. Mueller, G. Bollinger, Thos. P. Taylor, Adolph E. Kunz, F. J. Stibley, Frank A. Henry, Jr, Henry Buschmeyer, Jr., F. H. Wolpert. The first-named gentleman, having obtained the highest average in the examination, received the Gold Medal, presented by the Alumni.

At the Annual Meeting, held Tuesday, March 14th, 1877, the following Board of Directors was elected: C. L. Diehl, Emil Scheffer, Vincent Davis, Fred. C. Miller, B. Buckle, John Colgan, J. A. McAfee, Ed. C. Pfingst, Louis Eichrodt, Geo. A. Newman, C. Tafel, Wm. W. Smith At the meeting of the Board of Directors held the same day, the following officers were elected: President, C. Lewis Diehl; Vice Presidents, Emil Scheffer and Vincent Davis; Corresponding Secretary, Louis Eichrodt; Recording Secretary, Fred. C. Miller; Treasurer, Edward C. Pfingst; Curator, J. A. McAfee.

Pharmaceutical Society of Ireland.—At a meeting held in Dublin, April 3d, Dr. A. Smith in the chair, Dr. E. Davy read a paper *On the application of the molybdenum test to certain adulterations of essential oils,* in which it is suggested to detect alcohol in volatile oils by agitating the latter with an equal bulk of water, and after separation bringing a few drops of the water in contact with a solution of molybdic acid in sulphuric acid, contained in a white capsule, and slightly warmed, the temperature not to exceed 212°F. In the presence of alcohol a blue color will instantly appear; water agitated with pure volatile oils has no effect. The author employed a test-tube, drawn out to a fine point like a pipette.

Mr. R. J. Downes examined *Singleton's Golden Eye Ointment,* and found it to be

free from arsenic; the fatty base appears to be mutton suet combined with 12 per cent. oxide of mercury. He also criticized the use of yellow wax in the officinal *Ung. Hydrarg. oxidi rub.*, but overlooked the fact that it has greater preservative properties than white wax; as a base for this ointment he recommended vaselin.

Dr. Auchinleck gave a description of the *aloes* plants found in Egypt, and of the method adopted in collecting and preparing the juice for the market.

A specimen of a *spurious long buchu*, consisting of the leaves of Empleurum serrulatum, was exhibited at this meeting.

The British Pharmaceutical Conference will hold its next annual meeting in Plymouth, commencing on Tuesday, August 14, at 10 A.M.

Pharmaceutical Society of Paris.—Mr. Haaxman reported at the March meeting on the preparation of neutral tannate of quinia, and Mr. Husson on the detection of *foreign coloring matters in wine*, maintaining his previous statement that they are not precipitated, but partly altered on the addition of sugar of lead and alum. A communication of Mr. Bretet corroborated the precipitation of arsenic from *Fowler's Solution* as previously observed by Menière ("Am. Jour. Phar.," 1876, p. 217); the difference by titration with iodine was, however, greater than the weight of the sediment. Mr. Vigier proposed in preparing that solution to substitute the aromatic spirit by alcohol.

The following articles were exhibited: *Sebo de Palo*, a fat said to be obtained from a seed, is used in Brazil for killing vermin; *Boracic acid*, contaminated with a considerable proportion of lead, and *muriate of pilocarpina*, which was obtained by Mr. Petit in colorless crystals by evaporation in vacuo.

Society of the Apothecaries of Berlin.—At the meeting of April 17th, Dr. Schacht discussed the characteristics of *reduced iron*, as given by the different pharmacopœias, and the various methods suggested for determining the impurities, by measuring the hydrogen gas evolved on dissolving in an acid, and by weighing the undissolved portion after digestion or maceration with solutions of iodine, bromine and ferric chloride. The best results were obtained by macerating, at the ordinary temperature, a weighed sample of the reduced iron with bromine water, or with solution of bromine in potassium bromide, or with solution of ferric chloride, sp. gr. 1·30; the results of the former method, as compared with those of the last one, did however not sufficiently correspond with each other. The author believes, however, that a good reduced iron should be characterized as follows: "A very fine grey powder, without gloss; when heated in the air it burns to ferric oxide. It is completely soluble in warm diluted pure muriatic acid, with the evolution of hydrogen, which is indifferent to lead paper. When treated for half an hour, at the ordinary temperature and with occasional agitation, with 25 times its weight of solution of ferric chloride, sp. gr. 1·30, it is completely dissolved."

Mr. Hobe directed attention to the very variable proportions of drugs as directed for the *syrups* of the "German Pharmacopœia," many of which will not keep for a reasonable length of time. He opposed the addition of salicylic acid because too

large a quantity is necessary to prevent fermentation, but suggests the addition of a small quantity of alcohol, as at present directed for the syrups of ipecac and senega. For the preparation of *purified honey*, the same author suggests to accomplish the final evaporation in small quantities only, in order to obtain it light-colored.

Mr. Kobligk reported his experience with the preparation of *phosphoric acid* by Markoe's process ("Am. Jour. Phar.," 1875, p. 524 and 529), and does not believe it adapted to replace the process by nitric acid, as used heretofore.

EDITORIAL DEPARTMENT.

The Revision of the Pharmacopœia.—Dr. Squibb's plan for the future revision of the "United States Pharmacopœia" has been before those interested for abont a year. It was brought forward at the meeting of the American Medical Association in 1876, and has been acted on at the last meeting of the same Association, held in June, in Chicago. On a former occasion we stated that in our opinion the societies having a right to participate in such a revision should be heard on the subject; but aside from those that have been previously alluded to, but few have taken action that became public previous to that meeting; among them we may mention the colleges of pharmacy at Washington and Chicago, both being opposed to the general plan of revision as contemplated. The President of the American Medical Association, Dr. Henry J. Bowditch, of Boston, in his opening address, discussed the proposition in an impartial manner, weighing the various arguments and arriving at the conclusion that the Association was not prepared to adopt any new plan and had better defer action for another year. The subject was discussed by the Association on Thursday, June 7th, and a motion of Dr. N. S. Davis to indefinitely postpone the whole matter was carried amid loud applause.

The American Medical Association, in our opinion, has acted very wisely. It cannot be otherwise but that greater unity and increased interest will be secured for the next revision of the "Pharmacopœia," and if that interest be manifested by personal labor on the part of those who in the past had so much fault to find, Dr. Squibb's agitation of the subject will have accomplished what could scarcely have been expected through any other means.

Professor Theo. G. Wormley, M. D., formerly of Columbus, O., we are pleased to learn has been elected to fill the vacancy in the chair of chemistry of the medical department of the University of Pennsylvania, in this city, occasioned by the resignation of Prof. Rogers, who has been elected to the same chair in the Jefferson Medical College. Prof. Wormley is well known to our readers as a contributor to this journal, and as the author of that valuable work, "Microchemistry of Poisons." He has our hearty good wishes for success in his extended new field of labor.

Warburg's Tincture Once More.—We did not think that one of the asserted ingredients of the above tincture, which has recently gained such prominence, would possess sufficient interest for our readers; but having received many requests

for copies of the formula, we believe that our readers will value it, if only as a curiosity. The following has been copied from the "London Pharmacopœia" of 1746, and we may add that the "Edinburgh Pharmacopœia," also, contains a formula giving three more ingredients:

MITHRIDATUM S. CONFECTIO DAMOCRATIS.

℞. Cinnamon, 14 *drachms*; myrrh, 11 *drachms*; agaric, Indian nard, ginger, saffron, seeds of Mithridate mustard, frankincense, Chio turpentine, *each* 10 *drachms*; camel's hay, costus (or, in its stead, zedoary), Indian leaf (or, in its stead, mace), stechas, long pepper, hartwort seeds, hypocistis, storax (strained), opopanax, galbanum (strained), opobalsam (or, in its stead, expressed oil of nutmegs), Russia castor, *each one ounce*; poley mountain, scordium, carpobalsam (or, in its stead, cubebs), white pepper, candy carrot seed, bdellium (strained), *each* 7 *drachms*; Celtic nard, gentian root, dittany of Crete, red roses, Macedonian parsley seed, lesser cardamom seeds (husked), sweet fennel seed, gum arabic, opium (strained), *each* 5 *drachms*; calamus aromaticus, wild valerian root, aniseed, sagapenum (strained), *each* 3 *drachms*; meum athamanticum, St. John's wort, acacia (or, in its stead, terra japonica), bellies of skinks, *each* 2½ *drachms*; clarified honey, *thrice the weight of all the other ingredients*.

Warm the honey and mix with it the opium dissolved in wine; melt the storax, galbanum, turpentine and opobalsam (or expressed oil of nutmeg), together in another vessel, continually stirring about to prevent their burning; with these, so melted, mix the hot honey, at first by spoonfuls, and afterwards in larger quantities at a time; when the whole is grown almost cold, add, by degrees, the other spices, reduced into powder.

Looseness in Writing Prescriptions.—Quite a number of our cotemporaries have recently commented upon a prescription and the manner in which it was compounded; carelessness on the part of the prescriber and dispenser resulted in endangering the life of a lady, which was fortunately saved by the prompt administration of antidotes. The prescription was as follows: "℞. Hydrarg. chloridi, gr. vi; Pulv. Opii, gr. i. Put together in one paper." The clerk, supposing the medicine to be intended for external use, dispensed corrosive sublimate, without, however, labeling "Poison," or "for external use." In this he was clearly negligent or careless; in our opinion, he had no right to put up the prescription without first ascertaining the intention of the prescriber, or, if that was impossibble, he should have dispensed the weakest preparation—in this case calomel—unless the object of the physician could be clearly discerned from the directions. But there were *no directions*, and here it is where, in our opinion, the greatest censure should attach. Had the prescription been marked "One dose" or "Take at once," the mistake would not have happened; for we have not noticed that the clerk's knowledge had been questioned.

Unfortunately, a very large percentage of prescriptions are written in the same loose manner. Some years ago we had an argument with one of the most prominent men of the medical profession, whose care and exactness are widely known; the subject was the advisability of adopting a posological table containing the max-

imum doses of poisonous preparations, and we well remember his astonishment when another pharmacist corroborated our statement, that the majority of prescriptions written were without any indication as to the use of the medicine or the age or sex of the patient. "But then the prescription is not complete," he remarked, and we fully agree with the venerable gentleman. To err is human, and physicians are not exempt from this rule; prescriptions should be written so that the dispenser cannot doubt the intention of the prescriber, and that no necessity may exist for questioning the messenger. The latter course is frequently of no avail, since servants or children are rarely able to state how or in what dose the medicine is to be used; and, in our opinion, pharmacists should abstain from asking questions concerning the progress of the disease or the use of the medicine, except in so far as their friendly relations to the customer may warrant, or an incidental omission of the prescriber may necessitate. The latter case will rarely arise if the physician *completes* his prescription, by stating the dose and its frequency, and mentioning, approximately, the age of the patient, for which purpose names are not necessary; the object will be attained by marking the prescription "for the baby," "for the child," "for Mr. N's daughter," for Master N.," etc.

OBITUARY.

Joseph Bienaime Caventou, honorary Professor in the Paris School of Pharmacy, died at Paris in May last, at the ripe age of 82 years. He was born in 1795, and while an *interne* at the Pitié attracted attention in 1816 by a note upon the properties of different species of Narcissus, and subsequently made many of his investigations together with Pelletier. The discovery of a number of the most important alkaloids is a result of their joint labors, namely: strychnia in 1818, brucia in 1819, and about the same time, cotemporaneously with Meissner, veratria; in 1820 quinia and cinchonia; in 1821, cotemporaneously with Robiquet and Runge, caffeina, which had been previously known only in an impure condition. About the same time Caventou investigated the physiological functions of the chlorophyll contained in the green parts of plants. He was admitted to the Academy of Medicine at its foundation in 1823, and served as its dean at the time of his death. In 1826 he was selected for the chair of toxicology in the School of Pharmacy and resigned in 1857, notwithstanding the representations of his colleagues and pupils. For nearly twenty years he lived in modest retirement, and though, in accordance with his last wishes, no military honors were rendered to him and no discourse was pronounced over his tomb, his obsequies on May 7 were attended by all the members of the Academy of Medicine and of the School of Pharmacy. He was, indeed, one of the most worthy representatives of French science.

Edward McInall, Sr., a prominent apothecary of Wilmington, Del., died there May 12, of congestion of the brain, in the fifty-first year of his age. He learned the business with Mr. Edw. Bringhurst, and remained with him until he commenced business on his own account, in 1846.

THE AMERICAN JOURNAL OF PHARMACY.

AUGUST, 1877.

EXAMINATION OF COMMERCIAL COPAIBA.

By Charles A. Bowman, Ph.G.

From an Inaugural Essay.

The author discusses the natural causes of the different appearance of commercial copaiba, which are found in its being obtained from different species of Copaifera, in the probable mixture of the products of different species, and in the loss or oxidation of the volatile oil from exposure. The principal varieties used in the United States are Maracaibo and Para copaiva, the former of which is a thicker liquid than the last. Specimens of both kinds were procured for examination from reliable houses.

Para copaiba yielded a clear solution with a small quantity of absolute alcohol and a slight flocculent precipitate with a large quantity. With little alcohol, sp. gr. ·817, a separation into two layers took place; but with a large amount no separation occurred, and the solution was nearly clear. Alcohol, sp. gr. ·835, gave in all proportions two layers, the lower of which was transparent, the upper cloudy. Agitated with half its bulk of ammonia, a perfectly clear solution was obtained. On evaporating a little from paper, a resinous spot without greasy margin was obtained, and when evaporated in a capsule 44·4 per cent. of a hard resin was left.

The Maracaibo copaibas behaved differently; they were cloudy and without flocculent separation with absolute alcohol; milky and without separation with little alcohol, sp. gr. ·817, and cloudy with more. They separated into two layers with alcohol, sp. gr. ·835, gave a permanent milky mixture with half the bulk of ammonia, left on paper a resinous stain with a greasy margin, and on evaporation from a capsule a plastic or soft residue.

The Para copaiba was then adulterated with, first, 30 per cent. of castor oil; second, the same amount of linseed oil, and, third, 20 to 50 per cent. of Venice turpentine. With these mixtures the following behavior was observed:

Tests.	*Behavior of first.*	*Second.*	*Third mixture.*
Alcohol, absolute,	Clear solution.	Clear solution.	Clear, with much alcohol flocculent.
Alcohol, sp. gr. ·817,	Slightly cloudy.	Separation; upper layer yellow	Very slight separation.
Alcohol, sp, gr. ·835,	Separation when cold.	Separation, hot or cold.	Separation, hot or cold.
Ammonia water, half bulk,	Milky with 5 per cent. oil.	Milky with 5 per cent. oil; yellowish.	Clear solution
Dropped on paper,	Greasy margin.	Yellow greasy margin.	Well defined resin stain.
Boiled with water,	Soft; with little oil, plastic residue.	Residue soft or plastic.	Hard resin.
Heat,	Odor of copaiba, then of burning fat.	Odor of copaiba and of burning fat.	Distinct turpentine odor.
Petroleum benzin, 1 to 4 parts,	Clear solution, even in presence of 2 oil to 1 copaiba	Clear.	Dense floccules with 4 parts of turpentine.
Petroleum benzin, 10 to 12 parts.	Separation, even with 10 per cent. oil.		Dense floccules with 4 parts of turpentine.

The oil separated from the first mixture indicates pretty nearly the exact amount of castor oil present, but little remaining dissolved in the benzin. The solution of Para copaiba in petroleum benzin was clear until about 8 parts of the solvent had been added, when some floccules separated; the Maracaibo balsams gave clear solutions.

Experiments were also made with acids, oxidizing agents, various chemicals and solvents, without observing any distinguishing characteristic reactions; and though I have failed, as others have before me, to find a reliable test for the purity of the different varieties of copaiba, by which the presence of all adulterations could be detected, yet I may state that petroleum benzin, properly applied, will detect the presence of Venice turpentine, and not only the presence, but also very nearly the percentage, of castor oil. (See also paper in March number, p. 131).

ANALYSIS OF COTTON ROOT BARK.

By Charles C. Drueding, Ph.G.

From an Inaugural Essay.

The analysis was partly made at the laboratory of the Philadelphia College of Pharmacy, and after a series of preliminary experiments the following course was adopted:

Five pounds of the bark were exhausted with strong alcohol. About 24 pints of a beautiful dark-red colored tincture was obtained, which was reduced by distillation to 16 pints, and precipitated with an alcoholic

solution of acetate of lead (nearly ℥viii, dissolved in about Oiiiss alcohol, were required for this purpose), leaving a light straw-colored filtrate *B*.

The precipitate was diffused in about 8 pints of alcohol, and sulphuretted hydrogen passed through it until completely decomposed. The filtrate from the lead sulphide and washings were of a very dark red color; distilled to recover the alcohol, and evaporated, a *resinous* coloring principle was left, which yielded a dark brown-red powder, resembling powdered cochineal, wholly soluble in alcohol, ether and aqueous solutions of ammonia, soda and potassa, and precipitated from the three latter by an acid. With potassium hydrate it strikes a green color; petroleum benzin seemed to dissolve only a portion of it. The resin was therefore treated with hot benzin; about 12 pints of a light yellow-colored solution was obtained which, on cooling, deposited a small quantity of a peculiar *yellow substance*, giving the same chemical reactions as the resin. I was unable, however, to obtain a sufficiently large quantity of it to thoroughly investigate it; the benzin solution, on being evaporated to one-half its bulk, did not deposit on cooling, as was expected, but remained clear. The evaporation was then continued until all the benzin was driven off; the result was about one ounce of a blackish, greasy, semi-fluid substance, which proved to be *fat*, mixed with coloring matter, and on being boiled with caustic potassa formed soap.

The filtrate and washings *B* were reduced by distillation to about 10 pints, and freed from excess of lead by sulphuretted hydrogen and filtration. The sulphide of lead obtained was dried and marked *C*.

The filtrate was distilled to recover the alcohol, and evaporated to drive off as much as possible of the acetic acid, until about three or four ounces remained. This was mixed with six ounces of water, thrown on a moist filter, and the precipitate washed. The filtrate and washings *D* were of a brownish red color, and a sweetish bitter taste; the precipitate *E* was dark greenish, semi-fluid and greasy.

D was precipitated with subacetate of lead, and the precipitate *F* washed with water. The filtrate was marked *G*. *F* was diffused in water, decomposed with sulphuretted hydrogen, and the filtrate evaporated; a dark mass was left, having a peculiar somewhat bitter and astringent taste. It was tested for tannin, and found to give a green

color with sesquichloride of iron and also produced a precipitate with solution of gelatin.

G was freed from lead by means of sulphuretted hydrogen and filtration; the resulting liquid, about two pints, was of a light yellow color; it was evaporated on a water bath to a semi-fluid consistence. Two ounces of a red colored thick syrupy liquid was the result, having a sweet taste. Trommer's test gave an abundant red precipitate, proving the presence of *glucose.*

E was separated from the water, and washed with petroleum benzin until it ceased to pass through colored; about two pints of the benzin solution were obtained, having a dark color, yielding, after evaporation, about one ounce of *fixed oil* mixed with some *coloring matter*, and forming soap on being boiled with caustic alkalies. The portion left on the filter undissolved by the benzin was of a greenish-yellow color and hard enough to be powdered; it was soluble in alcohol and found to be *chlorophyll.*

The sulphide of lead *C* was treated with hot alcohol, but besides a little sulphur nothing was dissolved.

A portion of the dregs left after exhaustion with alcohol was dried, macerated with water for 24 hours, and expressed. The expressed liquid was mucilaginous and almost tasteles; evaporated to a syrupy consistence and mixed with an equal bulk of alcohol, an abundant precipitate of *gum* and an almost tasteless solution were obtained.

Five grams of the air-dry bark were ignited in a porcelain crucible; the ashes weighed 0·3 gram, or 6 per cent., and contained potassium, sodium, calcium, magnesium, iron, sulphuric and phosphoric acids.

The organic constituents of cotton root bark are a red and a yellow resinous coloring matter, fixed oil, gum, sugar, tannin and chlorophyll.

ON THE TANNIC ACID OF GUARANA.

By Francis V. Greene, M.D., U.S.N.

Although guarana has been known in Europe since the year 1817, when it was described by Cadet de Gassicourt, it does not appear that any complete chemical analysis of the substance has as yet been made, or that the component parts have been examined with sufficient care to afford an explanation of its peculiar action on the economy, when used as a therapeutic agent.

The chemical investigations of Theodore Martius, in 1826, proved that it was not a gum-resin, as had been supposed, but a mixture of the seeds of the Paullinia sorbilis with starch, and that it contained a crystalline principle, which he styled guaranin, under the supposition that it was a new principle. The true nature of guaranin was not detected until 1840, when Berthemot and Dechastelus submitted it to an ultimate analysis, which established the fact that it was identical in composition to caffeina. Their very valuable researches on the subject ("Jour. de Pharm.," 1840, p. 578) were, however, confined to the extraction and determination of the characters of the caffeina, and they merely refer incidentally to the gum, starch, tannin and oleaginous matters which exist in the guarana. The "Journal de Pharmacie et de Chimie" (vol. xxxix, 1861, p. 291) gives an extract from a note of M. Fournier in regard to an analysis he had made of guarana; but as it is only stated that he had found gum, starch, a fixed green oil, three volatile oils, a peculiar principle not fully determined, tannate of caffeina, and free tannic acid, without any reference to the relative proportions of the different substances, or the methods that had been employed to separate them, it can hardly be said that the analysis added anything of importance to what was already known in regard to the chemical composition of guarana. It is to be regretted that M. Fournier did not communicate his methods of isolating the different constituents, as an investigation of the physiological action of the component parts in a separate state might have afforded much information in regard to the value of the preparation as a curative agent. As far as I have been able to ascertain, no later chemical investigations of guarana have been made. It is possible, however, that Dr. Peckolt, who has examined a great number of the medicinal plants of Brazil, may have re-investigated the subject and given the results in his work, "Analyses de Materia Medica Brazileira."

During an investigation lately made, with a view to the extraction of the caffeina from guarana, several of the reactions of the accompanying tannic acid were so strikingly dissimilar from those of the tannic acids in general, that I determined to isolate it and examine it carefully. For this purpose a quantity of guarana in fine powder was treated with successive portions of boiling alcohol (75 per cent.), the alcoholic solutions filtered when cold, and the alcohol driven off on a water bath. The aqueous solution was then diluted with distilled water, and a slight

excess of basic acetate of lead added, which threw down a voluminous flesh-colored precipitate. This was thoroughly washed with distilled water, decomposed by sulphuretted hydrogen gas, and the sulphide of lead removed by filtration. The filtrate, after being heated on a water bath to drive off the excess of sulphuretted hydrogen, and filtered, gave a clear solution, with a scarcely perceptible tinge of yellow. Evaporated to dryness, this solution yielded an amorphous, slightly yellow, semi-transparent, partially scaly mass, which had the peculiar taste of tannic acid. This mass dissolved very readily in alcohol, and on allowing the alcohol to evaporate spontaneously, it was still found in the amorphous condition. That it is not incapable of crystallization, however, was proved by drying a small quantity of the aqueous solution over sulphuric acid under a bell-glass, when acicular crystals, radiating from amorphous centres, were formed.

The following is a brief description of the behavior of this acid with different reagents:

With ferric salts it gives a greenish precipitate, turning to brown on standing; with ferrous salts no precipitate is produced, but the color of the liquid is changed in a short time to a dark green. The fixed alkalies give the solution a dark, reddish-brown color; with ammonia it forms a lighter brown, while with lime water it gives a grayish-brown precipitate. It gives a green precipitate with acetate of copper, which is soluble in an excess of the precipitant. It does not precipitate the neutral sulphate of copper solution, but reduces the alkaline sulphate slowly in the cold, and rapidly when heated; it also reduces nitrate of silver by the aid of heat, and decomposes auric chloride in the cold. It gives dull white precipitates with barium salts (distinction from caffetannic acid), and a white precipitate with stannous chloride. It resembles caffetannic acid in not precipitating tartrate of antimony and potassa, and by readily precipitating both cinchonia and quinia, but differs from it in precipitating gelatin from solution. Its reactions with the alkaloids and gelatin serve to distinguish it from catechuic acid. With lead acetate it gives a dull white precipitate. It quickly decolorizes the solution of permanganate of potash, and gives a dark red color with molybdate of ammonia, which is discharged by oxalic acid.

It produces white precipitates with morphia and strychnia, and with aconitina and veratria with hydrochloric acid; it does not precipitate atropia, either in neutral solution or in presence of an acid. It gives

no precipitate with salicin or santonin, but produces a bright yellow precipitate with piperina, in presence of hydrochloric acid.

As these experiments show that the tannic acid of guarana does not give reactions precisely similar to those produced by any other of the tannic acids treated with the same reagents, it is but reasonable to conclude that it differs from them somewhat in chemical composition, and it should on this account have some distinguishing appellation. It might very properly be termed *paullinitannic acid*, which would be preferable to guaranotannic, as future investigations may show the acid of *Paullinia cupana*, which is used as a diet-drink, and probably of other species, to be identical with that of the *Paullinia sorbilis*.

NOTE UPON A REACTION OF EMETIA.

By Fred. B. Power.

Toward the many reagents commonly employed for the ready recognition of the principal alkaloids, by means of which their presence and identification may be unmistakably proven, emetia seems to maintain a neutral character, and independent of its emetic properties, and of the characteristic sparing solubility of its nitrate, no reaction has been observed by means of which its presence could be readily identified in in the course of forensic analysis.

Although probably never having met with an intentional criminal application, yet in view of the frequent and extended application of ipecac root, a marked reaction of its active principle seems deserving of notice, especially as reliance upon physiological experiments might possibly lead to its confusion with veratria, which possesses equally powerful emetic properties.

Chlorinated alkalies, which were proposed some time since as a test for morphia, and the behavior of a solution of chlorinated lime toward morphia and some other alkaloids and neutral principles, more recently examined by Wellcome,[1] afford with emetia a reaction which is apparently characteristic of this body. While most of the alkaloids examined by Wellcome were found to assume a reddish coloration with a solution of chlorinated lime—and to the number of these, according to Dragendorff, may be added physostigmia—it was observed that a solution of chlorinated lime produces with emetia

[1] "American Journal of Pharmacy," vol. xlvi, No. 7, page 305–7.

a bright orange or lemon yellow coloration, and is conveniently employed by touching a trace of the alkaloid upon a porcelain plate with a drop of the alkaline solution: the reaction being much favored by the addition of a drop of acetic or other weak acid, to insure the liberation of the hypochlorous acid, upon which the reaction apparently depends, as chlorine is incapable of producing the coloration, which is permanent and may be quite indefinitely retained.

A few drops of a solution of one part of emetia in 1,000 parts of water, when evaporated to dryness and brought in contact with a drop of the alkaline solution, readily produces the coloration; and with a solution containing one part of the alkaloid in 5,000 parts of water the yellow coloration is still perceptible.

In view of the isolation of the alkaloid when mixed with complicated organic substances, it must be remembered that it is not absorbed from acid, but very readily from alkaline solutions by amylic alcohol, chloroform, benzol and petroleum benzin.

The reaction may also be employed as a means of testing the value of various species of ipecacuanha. If a gram of the root of Cephaelis ipecacuanha in fine powder, or the cortical portion therein contained, be treated according to the process described by Prof. Flückiger,[1] for the isolation of emetia, *i. e.*, mixed with a small amount of quicklime and a few drops of water, the mixture allowed to dry upon the water bath, subsequently exhausted by chloroform, and the filtrate allowed to evaporate in a capsule containing a few drops of dilute acetic acid, the nearly colorless residue thus obtained affords with the alkaline solution the characteristic coloration.

The root of Richardsonia scabra, *Lin.*, or undulated ipecacuanha, which is occasionally quoted as a source of emetia, when similarly treated, does not produce this reaction, and which may confirm the supposition already entertained, that this root is destitute of alkaloid.

ON THE FLUID EXTRACT OF JABORANDI.

By Francis V. Greene, M.D., U.S.N.

In the experiments undertaken to test the therapeutic effects of jaborandi, which was introduced to the notice of the profession in Paris in 1873, by Dr. Coutinho, of Brazil, as a powerful sialogogue

[1] "Pharmacographia," page 335.

and diaphoretic, Rabuteau, Gubler, Rolin and other physicians of that city employed the remedy in doses of from four to six grams, infused in hot water, the dregs being swallowed along with the liquid. The same plan of administration was adopted in other parts of the Continent. In England, Ringer and others prescribed a tincture representing thirty grains to the fluidrachm, which necessitated the administration of two fluidrachms, as the equivalent of the four grams used in making the infusion.

Having, in September, 1875, received from Pernambuco, Brazil, a sufficiently large supply of the leaves for an extended trial of the new drug, I determined to employ a fluid extract in the investigation I purposed making in regard to its action on the economy, and, after several failures, succeeded in making a preparation which, in every instance it was administered, produced all the effects obtained from the infusion made from a drachm of the bruised leaves. The results obtained with this fluid extract in a series of experiments, conducted mainly at the U. S. Naval and St. Joseph's Hospitals in this city, were so satisfactory and so confirmative of the experience of foreign observers, in regard to the efficacy of the jaborandi, that I communicated them to the Bureau of Medicine and Surgery, Navy Department, in the form of a report, which was subsequently published in the "Philadelphia Medical Times" of October 30th, 1875.

In the investigation pursued at St. Joseph's Hospital, I was very kindly assisted by Dr. John M. Keating, who, on entering upon his term of service as Visiting Physician of the Philadelphia Hospital, in January, 1876, immediately introduced the use of jaborandi into the wards of that institution, where its application and action have since been carefully investigated by himself and colleagues. In a late very interesting clinical lecture on the subject, which has been presented to the notice of the profession through the columns of the "Philadelphia Medical Times" of June 23d, Dr. Keating states that the conclusions arrived at are strongly in favor of jaborandi as a safe and effectual remedy in various forms of disease. In the above-mentioned hospital it has become the practice to administer the drug in the form of an infusion of the leaves, as it was found that the preparations in the market could not be depended on to produce the desired action on the skin and salivary glands. As the same complaint has been made by a number of the profession, who have not succeeded in obtaining the

proper effects of the medicine with the preparations used by them, and as I know by experience that, as far as the fluid extract is concerned, a convenient and reliable preparation can be made with very little difficulty; I deem it advisable to call attention to some points in regard to physical characters of the jaboradi leaves, which, I believe, will account for the failures that have been experienced in making the fluid extract.

On examining a leaflet of jaborandi, we find that it is coriaceous in texture, and that, in addition to a prominent mid-rib, it contains a large number of veins which, leaving the mid-rib at an angle of about 60°, run in a parallel line to within a quarter of an inch of the margin, where they anastomose. The cellular tissue, which is covered with a tough epidermis, is studded with numerous receptacles of secretion,which give the leaflets their pellucidly punctate appearance, when held up to the light. As the result of this peculiar construction, when the leaves are ground in a mill, the woody structure is readily reduced to powder or very fine fibres, while the cellular portion is merely broken up into small fragments, still covered by the epidermis. If the material be moistened in this state with the menstruum, and placed in a percolator in small quantities at a time, it will be found in packing it, that it will spring up against the fingers as soon as the pressure is removed, and if, notwithstanding this fact, the percolation is proceeded with, on the addition of more menstruum the material will separate into several portions or layers, and the operation be thus rendered a failure. To prevent this separation, I have found it to be essential to reduce the leaves to a *moderately fine* powder; but, as even in this condition the cellular tissue was not so thoroughly disentegrated as to entirely overcome the tendency to the formation of channels in the packed mass, I furthermore adopted the plan of placing a thick layer of well-washed sand on top of the cloth covering the material, and in this way succeeded in obtaining a satisfactory percolate.

The menstruum that I have used to exhaust the jaborandi leaves has invariably been a 50 per cent. alcohol, which extracts the active principle promptly, as it is quite soluble in both alcohol and water.

With the above explanation of what I consider to be the cause of the failures that have hitherto occurred, I would suggest the following formula and directions:

FLUID EXTRACT OF JABORANDI.

Take of jaborandi leaves, in moderately fine powder, . 16 troyounces.
Alcohol (50 per cent.), ... a sufficient quantity.

Moisten the powder thoroughly with the menstruum, pack in a conical glass percolator, place a layer of two inches of well-washed sand on top of the cloth covering the material, add menstruum until the liquid begins to drop from the percolator, when the lower orifice is to be closed with a cork, and the percolator, securely covered, set aside in a moderately warm place for four days. At the expiration of this time remove the cork, and add more menstruum by degrees until the material is exhausted. The first fourteen ounces of the percolate are to be reserved, and the remainder evaporated on a water bath, with constant stirring towards the close, to two fluidounces, which are to be added to the reserved portion. If the percolation and evaporation have been properly performed, the fluid extract will not require to be filtered.

As the use of sand in the manner mentioned above appears to be called for theoretically in the case of a material like jaborandi, for the reason that in furnishing the required pressure, it secures the uniform distribution of the menstruum from the surface of the material through the whole extent of the mass, which point constitutes the essence of the process of displacement, its employment might be very advantageously extended to the percolation of various other substances, where difficulty of a similar nature is experienced.

THE FILLING OF WAFER CAPSULES.

By J. C. WHARTON.

The introduction of "wafer capsules" or "cachets de pain" may be regarded as a permanent and valuable addition to the art of pharmacy, and must meet with extended favor among the three classes of persons intended to be benefitted by them. By these classes are meant physicians, patients and pharmacists.

When first brought to notice in this section, their novelty created an unusual, perhaps an undue demand, and subsequently a very natural wane in popularity was manifest; but they are still prescribed, and fill a place that nothing else does so well.

It is often desirable to put up in them comparatively large amounts

of medicine, and to have them in as small wafers as possible. In fact, a pharmacist may gain some credit, both with physician and patient, by using the smallest size of wafers possible. I therefore write the present communication to indicate a method which, I think, will aid others, as it has done in some cases already when the plan was adopted. It is not an easy matter to *pour* a large amount of medicine in the centre of the wafer off of the end of a spatula or out of a piece of creased paper, as is often attempted, especially if the wafer is small. The consequence is that a larger size than necessary is frequently taken.

I think it worth while to state that an easy and sure method of filling them to their *utmost capacity* is, first to put the medicine into a small *cone* of paper or thin metal, and then compress the powder or other medicine slightly with the end of the finger or in any other convenient way, and afterward to invert the cone over the wafer and gently tap it if necessary, when on removing the cone the medicine will generally be found centrally located in the wafer, and nothing remain to be done but to cover it with another similar wafer, previously moistened, and finally compress the edges together. If the cone is short in proportion to the diameter of its base, the powder may be too easily dislodged and may be scattered over too much surface of the wafer. In such case the wafer may be placed on the cone before it is inverted, so as to invert both wafer and cone in one act, and thus confine the powder within the limits of the base of the cone. A little practice will insure quite a gratifying success.

It is scarcely worth telling many pharmacists that a cone can be made of paper in about two minutes by taking a round label or other paper, which should be glazed and of about one and a quarter inch diameter, cutting it in half and pasting along the straight edge or diameter of one-half, and folding it into a cone over the end of the finger, so that the straight edge shall form the junction or seam, and the paste will cause it to unite. By holding the seam together and gently warming it, the cone will soon be finished. A small wooden handle may be attached by thrusting it through the point of the cone and pasting it to the paper.

In filling the cone with the medicine, I think the best way is to press the edge of it against the tile or slab just by the powder, flattening the rim of the cone by gentle pressure, and forcing the powder into the

cone with the spatula held edgewise against the slab. After the powder is in its place a gentle pressure upon it with the finger, as before stated, will be of service in keeping it together and causing it to come out as if moulded to the form of the cone. In many cases also, the cone will retain the powder sufficiently well to be inverted without dropping it until gently tapped.

I alluded to this subject and constructed a little cone of paper at the last meeting of the American Pharmaceutical Association.

Nashville, June 29, 1877.

CORROSIVE SUBLIMATE contaminated with ARSENIC.

By Joseph Granville Smith, Ph.G.

From an Inaugural Essay.

Experiments made in the laboratory of the Philadelphia College of Pharmacy with commercial corrosive sublimate have demonstrated its frequent contamination with arsenic. This impurity, which most likely is derived from the sulphuric acid used in preparing the mercuric sulphate, from which afterwards the mercuric chloride is sublimed, is usually present in such small proportion that it is not readily recognized by treating the precipitated sulphides with sulphhydrate of ammonium; but in Marsh's apparatus or by Fleitmann's test its presence is very easily demonstrated.

For the purpose of determining the quantity of the impurity, it was endeavored to separate the two metals by boiling the corrosive sublimate with caustic potassa; but while the arsenic was completely dissolved a small portion of mercury likewise entered into solution. When the corrosive sublimate was treated with ammonia water, a portion of the arsenic was persistently retained by the white precipitate, which could not be removed by long continued washing, after which some mercury was found in the filtrate.

Resorting to the separation of the sulphides by means of ammonium sulphhydrate, and oxidizing the sulphide of arsenic to arsenic acid, the latter was estimated as arseniate of magnesium and ammonium, but the results from the same samples varied to such an extent that they are deemed unreliable. The following two methods, however, yielded figures which agreed among themselves as well as with those obtained on repeating the experiments, in each of which from 3 to 5 grams of

corrosive sublimate were used. The arsenic having been found to be present as arsenic acid, its percentage below is given as that compound; it should also be stated that several of the samples were not completely soluble in water, but left a white residue which proved to be calomel.

Determination as sulphide.—The acidulated solution was completely precipitated by sulphuretted hydrogen, the precipitate treated with ammonium sulphide, the filtrate acidulated with acetic acid, and the precipitate collected, washed, dried and weighed. It was then oxidized with nitro-muriatic acid, the separated sulphur weighed as such, while the portion dissolved was estimated as barium sulphate. The entire weight of the sulphur thus ascertained was then deducted from the weight of the precipitate by acetic acid, and the difference, being metallic arsenic, calculated to arsenic acid.

Determination as lead arseniate.—The solution was precipitated by hydrogen sulphide, the precipitate treated with ammonium sulphide and the filtrate evaporeted to dryness. The residue was oxidized with nitric acid, heated upon a sand bath until the sulphur and excess of nitric acid had evaporated, then thoroughly mixed with an excess of recently ignited pure oxide of lead, heated to dull redness, care being taken to prevent loss by decrepidation, and weighed. From this weight was deducted the previously ascertained weight of the crucible and lead oxide, the difference being the weight of the arsenic acid.

Five samples were examined for arsenic, with the following results:

Determined as	*1.*	*2.*	*3.*	*4.*	*5.*	
Sulphide, . .	·0537	·048	·032	·083	·0901	per cent. of
Lead arseniate, . .	·054	·052	·0333	·091	·0962	arsenic acid.

In some of the Southern States two qualities of corrosive sublimate are known, No. 1 being used in prescriptions, while No. 2, which is only about two-thirds the value of the other, is employed as a hemostatic, mixed with red precipitate. No assay has been made to determine their purity.

CARBOLIC ACID AS AN ANTISEPTIC.

GREENFIELD, MASS, June, 1877.

Editor American Journal of Pharmacy:

Some two months ago an amputation of the shoulder joint was performed by a surgeon of this place, and when an antiseptic ointment was called for, one containing salicylic acid was first prepared, but this proved rather unsatisfactory, as a constant burning and irritation was

experienced during its service, and it was thought best to use one of carbolic acid, which I prepared from the following formula:

℞	White wax, ...	℥i =	grams 31·1
	Lard (very best), ...	℥viii =	grams 248·8
	Carbolic acid (crystal), . . .	gr.xii =	grams 0·78
	Misce.		

The lard and wax were first melted on a water bath, then adding the carbolic acid, the whole was allowed to cool under constant stirring, and applied as often as the wound was dressed, first thrice and afterwards twice a day.

It has indeed proved so satisfactory for the case it was used that I thought it worth a notice in our "Journal," as nothing else was used but just the salve, though some warm weather prevailed here during that time; and after a duration of six weeks the patient was enjoying the free air as much as any of us. It may be well to add that in very warm weather, one ounce of the lard should be exchanged for one of wax, otherwise it would be too soft for use.

Respectfully, C. F. Wish.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Reactions of Alkaloids.—R. Godderfroy has observed the following reactions:

1. Ferric chloride dissolved in muriatic acid produces with not too diluted solutions of alkaloids in the same acid

Yellowish-red precipitates:	*Precip. soluble in excess:*	*No precipitates:*
Aconitia, piperina, strychnia, veratria.	Atropia, quinia, cinchonia.	Brucia, caffeina, morphia.

The precipitates contain one molecule of ferric chloride, combined with two molecules of the alkaloidal hydrochlorate; the quinia double salt may be obtained in small prisms by evaporating the acid solution, is freely soluble in water and alcohol, and possesses a bitter and inky taste.

2. Antimony trichloride dissolved in muriatic acid, with solutions as before,

Precipitates from rather dilute solutions:	*From concentrated solutions:*	*No precipitates:*
Aconitia, quinia, cinchonia, conia, piperina, strychnia, veratria.	Atropia, nicotina, solania.	Caffeina, morphia.

The precipitates are white (with piperina yellow), soluble in dilute muriatic acid, and decomposed by water.

3. Solution of stannous chloride, with solutions acidulated with muriatic acid:

Precipitates from dilute solutions:	*From conc. solutions:*	*No precipitates*
Aconitia, atropia, brucia, quinia, cinchonia, codeia, conia, morphia, piperina, solania, strychnia, veratria.	Nicotina.	Caffeina.

The precipitates are white and crystalline, slightly soluble in water, less in acidulated water; the solution of caffeina with stannous chloride in muriatic acid yields, on evaporation, crystals of the double salt.—*Archiv d. Phar.*

Hydriodate and Hydrobromate of Morphia.—The former salt, whether prepared by dissolving morphia in hydriodic acid, or by double decomposition of morphia acetate and potassium iodide, according to E. Schmidt, crystallizes in long silky needles of the composition $C_{17}H_{19}NO_3HI+2H_2O$. They are sparingly soluble in cold, more readily in hot water, lose the $2H_2O$ when exposed to 100° C., and reabsorb the water again on exposure to the air.

The hydrobromate resembles the former salt in appearance, behavior and composition, the latter being $C_{17}H_{19}NO_3HBr+2H_2O$.—*Ber. d. deutsch. Chem. Ges.*, 1877, p. 194.

Citrate of Iron and Quinia.—Three samples manufactured in England, two of which were labeled "British Pharmacopœia," were found by B. H. Paul to be very deficient in quinia. The Pharmacopœia requires 16 per cent. of that alkaloid, but the yield was

Quinia, ...	6·80	7.08	1·69 per cent.
Other alkaloids (cinchonia, cinchonidia, etc.), .	2·16	2·62	5·36 "
Total, ...	8·96	9·70	6·96 "

Professor Attfield corroborated the statement that an unprincipled manufacturer had been palming off the preparation as being of official strength, while it contained only about one-half the amount of alkaloid.—*Phar. Jour. and Trans.*, April 14 and 21.

On the so-called Citrate and Valerianate of Caffeina.—P. J. Haaxman repeats the statement of Hager and others that caffeina does not combine with citric acid, and that the so-called citrate of caffeina is merely the alkaloid with a little free acid adhering to it. From his experiments made with caffeina and valerianic acid he arrives at the

conclusion that they have a similar behavior, the alkaloid crystallizing from the solution, and the crystals, after having been washed with cold water, retain only a sufficient trace of the acid to impart to them a faint odor of valerian.—*Rép. de Phar.*, 1877, p. 142, from *Nieuw Tydsch. voor de phar. in Nederl.*

Separation of the Alkaloids of Hyoscyamus, Stramonium and Belladonna in Forensic Analysis.—720 grams of each of the cut leaves were mixed with flour and fat, then twice digested, at 50° C., for 24 hours, with water acidulated with hydrochloric acid, the solutions evaporated, by means of a water-bath, to a thin syrup, this mixed with three times its volume of alcohol, set aside for 24 hours, filtered and concentrated to remove the alcohol. The aqueous residue was agitated with petroleum benzin until the latter remained colorless; it was then rendered alkaline by ammonia and twice extracted with benzol, which was afterwards evaporated to recover the alkaloids. The alkaline mother-liquors were acidulated with hydrochloric acid, agitated with ether, again rendered alkaline, and exhausted with two portions of ether. The mother-waters were again similarly treated, only chloroform being substituted for the ether. The following shows the yields:

	From Benzol.	From Ether.	From Chloroform.
Hyoscyamus,	·006 gram, yellowish amorphous,	·003 gram, amorphous,	·108 gram, amorphous.
Stramonium,	·003 gram, white,	·005 gram, crystalline,	·376 gram, yellowish crystals.
Belladonna,	·003 gram, white,	·008 gram, "	·410 gram, "

On treating the mother-liquors with amylic alcohol, those of hyoscyamus only yielded traces of alkaloid. The liquids used for removing the color from the acid solutions were free from alkaloids, except chloroform, which is therefore not adapted for this purpose.—*Phar. Zeitschr. f. Russl.*, 1876, p. 641.

Hydrochlorate of pilocarpina has been employed by Dr. Zaubzer, who considers it a very valuable sialagogue and diaphoretic, the latter property being apparently somewhat inferior to that of jaborandi, over which it has the advantage of not producing nausea or emesis, nor of its administration being followed by headache or vertigo.—*Phar. Zeitung*, No. 25.

Cyclamin ($C_{20}H_{34}O_{10}$) has been the subject of investigation by Dr. L. Mutschler, who obtained it by boiling the tubers of Cyclamen europæum with alcohol of 65 to 70 per cent. and crystallizing. It is a white powder, consisting of minute globules, inodorous, of a very pun-

gent and acrid taste; the dust is sternutatory. It is probably identical with *saponin*. By heating the powder in sealed tubes, by boiling its aqueous solution, and by the influence of emulsin, yeast or dilute acids, cyclamin is split into uncrystallizable sugar and white, inodorous and tasteless *cyclamiretin*, $C_{15}H_{22}O_2$.

Primulin obtained from the roots of primula was found to be identical with cyclamin. Primula camphor obtained by distillation of the root, has a fennel or anise-like odor; its taste is at first burning, then sweetish. It is sparingly soluble in water, the solution acquiring a deep violet color with ferric chloride. Its composition is $C_{22}H_{24}O_{10}$; on boiling with potassa it yields salicylic acid and a small quantity of another acid, which is colored deep blue by ferric chloride.—*Zeitschr. Oest. Apoth. Ver.*, No. 8, from *Ann. d. Chem.*

Asparagin in Sweet Almonds.—L. Portes has obtained 30 grms. of crystallized asparagin by treating 11 kilos of almonds with 90 per cent. alcohol; by using absolute alcohol a larger proportion could be obtained.—*Jour. de Phar. et de Chim.*, Jan., 1877, p. 30.

Strophantus hispidus, D. C., or Inée, an apocynaceous plant, is used in tropical Africa as an arrow poison. E. Hardy and N. Gallois have isolated a poisonous principle, *strophantin*, of considerable toxic power, quickly causing cessation of the heart's action when injected into a frog. It was obtained from the seeds freed from the hairs, by macerating them in alcohol slightly acidulated by hydrochloric acid, evaporating, treating the extract with cold water and evaporating spontaneously. The crystals are white, soluble in water, slightly soluble in alcohol and chloroform; it contains no nitrogen and is not a glucoside. The hairs subjected to a similar treatment yielded a crystalline alkaloid, *inein*, which did not stop the movements of the heart.—*Phar. Jour. and Trans.*, March 17—*Comp. Rend.*, lxxxiv, p. 261.

The juice of the sugar cane, according to Arno Behr, contains *aconitic acid*, which was obtained from the preserved juice and from crude sugar, from the latter to the amount of 0·149 per cent. Some Cuban sugars separated from their aqueous solutions minute crystals of aconitate of calcium. Pure aconitic acid, obtained from this source and from citric acid, was found to fuse at 187 to 188° C.; the lower fusing point usually given is due to impurities.

The author found also oxalic acid in the precipitate, obtained by dis-

solving crude sugar in little water, and mixing the solution with alcohol.—*Ber. d. Chem. Ges.*, 1877, 351–355.

Arrayan of the Spanish Pharmacopœia is *Myrtus communis*, Lin., the only species of this genus indigenous to Europe. Domingo Parodi states that the *Eugenia cisplatensis* of Cambessedes is the arrayan of the Argentine Republic, and possesses all the tonic and astringent properties of the former.[1]

The same author gives also a minute description of *Eugenia Iba-viyu* (author ?), of Paraguay and Chaco, the fruit of which is edible, has a harsh and sweet taste, and contains chlorophyll, resin, volatile and fixed oil, tannin, sugar and citric and malic acids. The leaves are pellucid punctate from oil glands, and are aromatic and astringent. The bruised leaves of both the arrayan and iba-viyu are used in the form of decoction in mucous atonic discharges.—*Revista Farmac.*, Buenos-Aires, March.

Pitury; an Australian Rival to Coca.—Baron von Mueller has succeeded to obtain some leaves of the pitury, and with certainty determined them to belong to *Duboisia Hopwoodii*, F. Muell., a bush referred to the order *Solanaceæ* or *Scrophulariaceæ*, which grows sparingly in the desert scrubs, from the Darling river and Barcoo to West Australia. In a recent communication to the "Australian Medical Journal," Baron von Mueller states that the natives chew the leaves to invigorate them during their long footjourneys through the deserts, just as coca leaves are used in South America. Those living near the Barcoo travel many days' journey to obtain the precious foliage, which is broken into small fragments and carried about by them in little bags. It is also employed to excite courage in warfare.—*Phar. Jour. and Trans.*, April 28.

Constituents of Cubebs.—E. Schmidt has again examined cubeb camphor, and corroborates the correctness of his previous analysis ("Am. Jour. Phar.," 1870, p. 225). It must be regarded as a hydrate $C_{15}H_{24}.H_2O$, which is further proven by the observations of Schaer and Wyss, that on distilling oil of cubebs which has been entirely deprived of water, water is again formed, and by the decrease of H and O in

[1] The *arrayan* of Peru is likewise a myrtle, the *Myrtus arrayan*, HBK. See "Synop. Plant. Æquinoct.," vol. iii, p. 413.—Editor Am. Jour. Ph.

the composition of this camphor when kept for some time over sulphuric acid.

A further examination of cubebin proved the correctness of Heldt's formula $C_{30}H_{30}O_9$, and its formation from the oil may be explained by the equation $2C_{15}H_{24}+18O=9H_2O+C_{30}H_{30}O_9$.—*Br. Chem. Ges.*, p. 188–191.

Oil of cubebs, distilled by A. Oglialoro, was observed to contain two hydrocarbons, one boiling between 158° and 163°C., having the composition $C_{10}H_{16}$, the other boiling between 250° and 270°C. The latter yielded with muriatic acid a compound $C_{15}H_{24}HCl$, which crystallizes from boiling alcohol. By heating it in sealed tubes to about 175°C., the hydrocarbon $C_{15}H_{24}$ is again separated, and after purification from sodium has a density of ·9289 at 0°C., boils at 264° to 265° C., and deflects polarized light to the left. No trace of the hydrocarbon boiling at 230°, observed by Schmidt, could be obtained.—*Jour. Chem. Soc.*, Dec., 1876.

Decomposition of Oil of Turpentine by Heat.—On passing oil of turpentine slowly through a red hot iron tube, G. Schultz observed that a large quantity of incombustible gases was generated, which were not further examined by him. A black tar collected in the well-refrigerated receiver, and was found to consist of benzol, toluol, xylol, unaltered oil of turpentine, naphthalin, phenanthrene, anthracene and methylanthracene, nearly all of which compounds have been found in coal tar, and many also occur in wood tar.—*Ber. Deutsch. Chem. Ges.*, 1877, p. 113–118.

Action of Potassa upon Cuminol.—Rich. Meyer boiled cuminol with six times its quantity of alcoholic solution of potassa for 12 hours in a retort connected with a reversed cooler. On pouring the mass into water a dark-brown oil separated, which besides some resinous matter consisted mainly of cuminic acid and cuminic alcohol; the presence of cymene, which was found by others, was not observed.—*Ibid.*, p. 149–154.

Oil of Mustard.—The observation of Gerlich ("Am. Jour. Phar.," 1875, p. 567), that allyl bromide and potassium sulphocyanide produce at a low temperature allylsulphocyanide, which at a higher temperature is converted into its isomer oil of mustard, has induced E. Schmidt to study the effect of myrosin upon myronic acid at 0°C. He found that

oil of mustard is produced, but that at the same time allyl sulphocyanide is formed, which was recognized by warming the oil with alcoholic solution of potassa, acidulating and testing with ferric chloride, when an intense red coloration is produced, indicating the presence of sulphocyanide.—*Ibid.*, p. 187.

The artificial oil of mustard of commerce, according to Dr. E. Mylius, is not identical with that obtained from the seeds, as has been stated by Dr. Schacht and others. He found in a sample of 500 gms., by subjecting it to fractional distillation, ·02 per cent. hydrocyanic acid, ·8 sulphide of carbon, 92·2 allyl-mustard-oil, 4·0 polysulphides, probably allyl trysulphide, and about 3 per cent. of nitrogenated sulphur compounds, which are not volatile without decomposition. The polysulphides, more particularly, impart to the oil a very disagreeable odor. The author believes that by careful rectification on a large scale a pure colorless article might be obtained, which still could be sold below the price of the natural oil. The artificial oil seems to be obtained by the distillation of a mixture of an allylsulphate with potassium sulphocyanide.—*Arch. d. Phar.*, March, p. 207–213.

Oxalate of Cerium.—H. G. Greenish has examined six samples of this salt, and found them all to be contaminated with some lead, iron, magnesium and sulphuric acid; several, also, with chlorine and calcium, and one with aluminium. Five of the samples lost by incineration nearly the quantity (52 per cent.) required by the Pharmacopœia; the sixth lost only 32·, and a sample of German origin 44·8 per cent. One of the samples was used for estimating lanthanum and didymium, which amounted to 68·2, the cerium only to 29 per cent. of the basylous radicals. The presence of so large a proportion of the former renders it doubtful whether the therapeutic action attributed to cerium is due to that metal alone, or whether it is shared equally by the lanthanum and didymium, with which in commercial samples the cerium seems to be always combined.—*Phar. Jour. and Trans.*, May 12.

Presence of Ammonia in Bismuthi Subnitras.—W. G. Piper has observed that commercial subnitrate of bismuth usually contains small and variable quantities of ammonia, which he supposes to be derived from the action of the metallic bismuth upon the nitric acid, probably according to the equation $2Bi_2+15HNO_3=4Bi_3NO_3+6H_2O+NH_3+N_2O_3$.

In four samples the quantity of ammonia varied between ·008 and ·076 per cent.—*Ibid.*, April 21.

Glycerite of tragacanth, as an excepient for pill masses, has been experimented with by J. C. Thresh. The glycerite was made by mixing 3 drachms of powdered tragacanth with 6 drachms of glycerin until smooth, and then adding 6 drachms of water. No material difference was observed by changing the proportions to glycerin 9 drachms and water 4 drachms. In most cases a pill mass was obtained which rolled well and had a good consistency after having been kept for six months. The pills made with this glycerite, on being macerated in water with occasional agitation, were found to swell considerably, coloring the water but slightly, and retaining their form for several hours.—*Ibid.*, March 24.

CULTIVATION of MEDICINAL PLANTS at BANBURY.

By E. M. Holmes, F.L.S.,
Curator of the Museum of the Pharmaceutical Society.

The principal farmer of medicinal plants in the neighborhood of Banbury is Mr. Usher, of Bodicote, a small village about two miles from the town. At present he has about sixty-five acres under cultivation, twenty of which are devoted to rhubarb, forty to henbane, and four or five only to the white poppy. He has also lately commenced the cultivation of *Rosa gallica*, L., on a small scale.

On a recent visit to Banbury much interesting information was kindly given me by Mr. Usher, and as it was the result of observations which had been made by that gentleman during the course of many years it seems very desirable that it should be placed upon record.

Rhubarb.—The history of the cultivation of this plant in this district has been briefly sketched by Hanbury in "Pharmacographia." In that work he attributes the plant cultivated at Banbury to *Rheum Rhaponticum*, L. It, however, more closely resembles *R. undulatum*, L., differing chiefly from the description of that plant, as given by Meisner, in the upper leaves being distinctly stalked. From *R. Rhaponticum* it differs in all the leaves being longer than broad and minutely ciliate at the margins, and in the petiole being distinctly channelled on its upper surface above the middle, although it becomes flat near the base.

The leaves have two or three somewhat triangular teeth near the point and the petioles and stem are slightly furrowed, and the ochreæ

do not appear to be deciduous as in *R. undulatum*. It would thus appear to be a hybrid between the two if indeed the two species are really distinct.

When in blossom the panicle is at first deecidedly spreading, so much so as to present an appearance totally different to that it offers at a later stage, when its branches become quite erect. Indeed, had I not found the two stages proceeding from the same root, I could hardly have believed that there were not two species growing in the same field. On closer inspection, however, the character, leaves and leaf-stalks convinced me that only one species was present.

The soil on which the plant is chiefly cultivated is a rich red friable loam, which appears to suit it well, although in some spots where the soil is damp the root decays and the plants gradually disappear. Mr. Usher's experience with regard to this plant is as follows: Up to three or four years of age the plants flower rather freely, but after that time they rarely produce inflorescence. Singularly enough, for many years past no fruit has been ripened, the little that is formed falling off soon after "setting," so that it would seem as if the plant had already acquired a tendency to become a root-producing rather than a fruit-yielding form.

The rhubarb plant does not appear to be much attacked by insects or by fungi. After about eight or nine years the soil becomes exhausted, and rotation of crops becomes necessary. The exhaustion of the soil is, however, in some degree counterbalanced by the matter returned to it by the leaves, which are allowed to decay on the ground, and even those which are taken up with the root are afterwards returned in the form of manure.

The young plants are not obtained from seed, but are always propagated from the lateral shoots of plants about four years old, at which period the shoots are more vigorous and produce finer plants than if obtained from older ones. The petioles are never gathered for food, because it has been found that so doing injures the size and quality of the root. The young plants are set at distances of three feet apart, and the root is not fit for collecting until the plants are about four years old. From that period up to nine or ten years of age the root improves in size and quality. Plants of different ages are of course cultivated in different fields so as to secure a succession of harvests each year. Plants

of about four years old yield from one and a half to two tons of dried root per acre, but ten year old plants will yield about five tons per acre.

The drying is by no means an easy task. The roots are dug up in hot weather, at any time between July and October, and for the first fortnight are exposed to a current of air on wicker baskets in a covered shed. They are then removed to the drying-room, where they are dried gradually but thoroughly for about six weeks, by means of a current of heated air. This part of the process requires great care; lest the outer portion should be dried too rapidly, while the interior is still moist. The large central portion, or tap root, furnishes the pieces known in trade as "fine large flats" and "fine large rounds." The "small rounds" and the cuttings commonly known as English "stick" rhubarb are obtained from the side branches of the root. Some of the flat pieces, except for their shrunken exterior, are not unlike the East India rhubarb of commerce, and being more thoroughly dried right through and harder in the centre seem to meet with a greater demand than the rounds. The raspings obtained in trimming the pieces are ground into powder. The average yield of the dried root every year is from eight to ten tons.

Of the *Rheum officinale*, Mr. Usher has now under cultivation in his garden about forty large plants between two and three years old, as well as about 200 seedlings. These plants are truly magnificent, each plant occupying a space from eight to twelve feet square, and standing four or five feet high. Some of the leaves are nearly three feet broad, and longer than they are broad. It is just suitable as an ornamental plant for lawns, where it would have plenty of room to grow. Indeed it is already used in this way in some of the public gradens in Paris.

The root of only one plant has as yet been dried, and was obtained from a plant barely two years old. A piece of this root has been presented to the museum of the Pharmaceutical Society, the remaining having been almost all sent to the Philadelphia Exhibition, where it obtained a medal, and was purchased.

In color, the dried root is paler, although the veins are darker, than in the East Indian rhubarb. Mr. Usher informs me that it nevertheless yield a bright yellow powder. The external markings do not exactly correspond with those of the East India rhubarb, the peculiar reticulated appearance characteristic of that sort not being visible on the two pieces that I have seen. This may, however, be due to the

age of the root, which was less than two years old. It yet remains to be seen whether the root differs when older, or whether some portions present a different aspect to others. These points I hope to have an opportunity of investigating a little latter on, when Mr. Usher will dig up some larger roots. Towards the close of the year he will probably have sufficient of the dried root of this species to be available for therapeutic purposes, and it will then only remain to ascertain whether its purgative properties are equal to those of the foreign rhubarb, which after all will be the test of its acceptance with the medical profession. A chemist at Banbury has prepared some simple tincture from the trimmings of the root, in the proportion of two ounces to the pint of proof spirit, and has found it an effectual purgative in ounce doses.

Henbane.—Doubtless many of the readers of this Journal have often wondered at the high price of biennial henbane. The information which Mr. Usher has kindly furnished will probably throw considerable light upon this point.

The biennial plant is the only one cultivated at Banbury, it being found that the presence of the annual plant tends to deteriorate the biennial variety. With regard to the difference between the two plants, Hanbury says there is scarcely any distinctive character, except that the one is annual and the other perennial. There is, however, something very distinctive in habit. The biennial plant grows to the height of two or three feet, and is abuandantly branched, and the stem is often nearly an inch thick at the base. At a distance, a field of biennial henbane looks like a field full of thistles, so much so, that Mr. Usher has occasionally heard the remark from farmers passing by, "That is bad farming, look at those thistles." This curious appearance is owing to the leaves being deeply cut, in fact almost pinnatifid. The chief difference in the leaves of the two varieties is, that in the biennial plant the leaves are about twice as long as in the annual one, and deeply cut, and the terminal lobe of the leaf is long and rather narrow.

The leaves of the upper branches, however, resemble when young those of the annual variety, being shorter and having the top of the leaf much broader, and more triangular, not lanceolate as in the stem leaves.

The seed of the biennial plant is sown in May or June, and either appears in a few days or not for several years. Mr. Usher informed

me that in one field sown with henbane none of the seed came up and the field was again sown with other crops, and it was not until nine years afterwards, during which period the field had been several times ploughed, that it yielded a good crop of hanbane quiet unexpectedly, and without any more henbane seed having been sown. This uncertainty seems to depend upon the weather being dry soon after the seed is sown. If the weather is damp immediately after sowing the seed, it usually comes up at once.

The cultivation of the plant is beset with difficulties. In the first place, it grows very slowly when young, and is soon hidden by weeds of more luxuriant growth, so that it has been found necessary to mix some rapidly growing plant, such as mustard, with it in order to indicate where it is sown. It also requires shelter when young. This difficulty Mr. Usher has obviated by sowing it in rows between beans so that it may be protected in its early stage. As soon as the young leaves are fully formed the turnip fly attacks them; when the autumn leaves of the first year have decayed a white slug eats away the central bud; and if it still manages to live a wire worm attacks the root during the winter. It will be easily understood, therefore, why the fields of henbane often present very large bare patches, and why the price of the drug is so high. The plants are collected for drying about the third week in June. The upper leaves are deprived of the midrib, and these as well as the flowering tops are dried, and form the best biennial henbane of commerce. The lower eaves and stems are used for preparing extract, for which purpose they are crushed under an edge runner, and the juice squeezed out by hydraulic pressure and then evaporated down to a proper consistence. It is obvious that an extract prepared in this way on the spot by the grower is likely to be better than when prepared from the herb sent to a distance by rail, for these plants become heated in twenty-four hours when packed closely. The leaves and flowering tops are dried in malt kilns, of which seven are in use at once. The leaves are spread thinly at first and are turned over about three times a day, and as they become somewhat dry are collected closer together into rows or heaps on the kiln floor. As one lot becomes partially dried it is removed to another kiln until quite dry, which usually happens in about three days, and a fresh lot takes its place.

There are one or two points with regard to the flower which are

rather interesting. The flowers are proterogynous, the stigma becoming mature and viscid before the anthers open, and the stigma and nearly half the style are protruded beyond the unopened flower bud. The corolla is more deeply divided in its lower half than elsewhere, and the stamens and pistil are depressed towards this portion, so that insects visiting the flower for nectar must pitch upon the stamens and receive the pollen upon their legs or abdomens, and must thus almost of necessity convey it to the protruded stigma of the unopened flower. When the corolla is fully grown it exceeds the stigma, so that the style does not appear to grow in proportion to the corolla. The anthers are furnished with a curious connective of a narrowly triangular form into which the filament tapers. As soon as the anther bursts it becomes bent backwards away from the stigma and towards the ovary as if to prevent the pollen from falling on the stigma of the same flower. Mr. Usher informs me that the annual variety does not possess a long protruded style, but as he had no plants growing I was unable to verify this observation. It would be interesting to ascertain if the henbane is dimorphic, and if the annual plant is the second form. Another interesting point of inquiry is whether the plant possesses the power of digesting the multitude of minute insects which late in the season are caught by the clammy glandular hairs. The frequent occurrence of henbane on manure heaps or places in which insects are abundant seems almost to point to such a property.

White Poppy.—The culture of this plant is attended with so much trouble and expense that it scarcely repays the labor expended on it. The seed has to be selected very carefully, for singularly enough the poppy shows a constant tendency to "sport," and if left to itself, the flowers of the white poppy become colored in a few generations; the size of the capsule decreases, and the color of the seeds and of the flowers becomes darker in proportion, until at length the flowers become purplish black, and the seeds quite black. Mr. Usher accounts for this fact by supposing that insects carry the pollen from the wild red poppy (*Papaver Rhœas*, L.) to the white one.

In order to get large capsules, only the very whitest seeds are retained and sown. Those poppies which have dark flowers, he states, produce darker colored somewhat oblong capsules. The German poppy seed produces a large capsule much flattened at the top and bottom, and with the carpels strongly convex and prominent so as to

have mnch the appearance of a peeled orange, or of the capsule of *Papaver hybridum*, L. This variety is not, however, readily accepted in commerce.

The seeds of the white poppy are sown in rows about 20 inches apart. When young the plants require constant weeding. The capsule, when the flower has fallen, is about the size of a walnut, and is stated by Mr. Usher to grow to the size of an orange in the short space of ten days, although it takes nearly five weeks to ripen. Each plant bears about two or three capsules. The harvest is collected during the last week in August or the first in September. A wagon load of the capsules is placed on the floor of each of the kilns and forms a layer about a yard deep, the whole of which becomes dry in about twelve hours, and is then ready for sale.—*Phar. Jour. and Trans.*, June 16.

SOME METHODS OF ESTIMATING TANNINS.[1]

By H. R. Proctor, F.C.S.

There are few substances of equal importance to the tannins, of which the chemistry is in so unsettled a state. This is, no doubt, primarily due to their complexity and unstable character, which makes their investigation one of great difficulty; and, secondarily, to the indifference and ignorance of chemistry of those to whom the knowledge is of commercial importance. But tanners may be well excused for some distrust of chemical analyses when we consider the discordant results which are yielded by most of the processes in use. With a view to exhibit the relative merits of these processes, I have ventured to give the results of comparative experiments undertaken to test their accuracy, and to point out, if possible, those which merit confidence.

The process which has been brought most prominently before the public of late is that of Muntz and Ramspacher, which consists in forcing a tannin infusion through a piece of raw hide, taking the sp. gr. before and after, and calculating the tannin from the loss. In a paper which I communicated to this Society some little time since (Proceedings, III, 213), I pointed out that the raw hide not only absorbed the tannin, but also a large proportion of the free acids in the infusion, thus, in some cases, causing a notable error. To this I may now add

[1] From the Transactions of the Newcastle-upon-Tyne Chemical Society, 1874–1877.

that it is extremely difficult to absorb the whole of the tannin, that the first portion of liquor which passes is invariably lighter than succeeding portions, and that the sources of error are so large in proportion to the quantities to be measured, that the results are of little practical value. In proof of this, I may mention that a series of nine analyses of the same sumach, well mixed, and kept in a tightly-corked bottle, gave results varying from 18 to 28 per cent., and a mean error for each single experiment of 3·15 per cent., or upwards of 13 per cent. of the total tannin, while the mean value—23·9 per cent.—was probably itself too high. In these analyses the utmost care was taken, and in each case the absence of tannin in the filtrate was proved by gelatin. If we assume that tannin is worth 20s. per ton per cent., which is not far from the truth, the chemical valuation of this sumach would vary from £18 to £28 per ton, with an average error of £3 3s., and obviously is far more erroneous than the merest guess. If any further proof of the inaccuracy of the method is needed, I may quote the results of a series of twelve analyses of a valonia by Mr. W. N. Evans, who, perhaps, has had more practice with the tan-tester than any other man in England. The average error exceeds ten per cent. of the whole quantity of tannin, and the money values vary from, say, £17 5s. to £28 10s. per ton.

The older method of Hammer, in which absorption by hide raspings takes the place of the raw hide-filter, is in my experience still more inaccurate; and I cannot say that the slight modifications proposed by Nickerson are any improvement.

Another method which has long been in use is precipitation by volumetric solution of gelatin and alum. With a solution of five grms. of gelatin per litre I found it impossible to say whether tannin or gelatin was in excess, with less differences than about 4 per cent. of the total quantity employed, and then the reactions were somewhat doubtful. These experiments were made with pure tannin; with catechu or gambier the uncertainty would be far wider, and with used tan-liquors it would be worse still. Under favorable circumstances and with great patience it is possible to obtain rough estimates by this method; but this is all I can say.

Concerning Sir H. Davy's still older method of precipitating with gelatin, filtering, drying, and weighing, and reckoning four-tenths of the whole as pure tannin, Dr. J. Watts says ("Phar. Jour." viii., 517) it

has "been shown to be both tedious and incorrect, as the solution refuses to filter, and the first portions precipitated contain a far larger proportion of tannin than do those which fall towards the end." Other chemists make the same statements, so that I had not thought it necessary to repeat their experiments. Very recently, however, I have learnt that Mr. Stoddart, of Bristol, and Mr. Dearden, of Bury, are again employing the plan, using sufficient alum to make the precipitate coagulate, and washing by decantation with boiling water. Mr. Stoddart informs me that the results agree fairly with a modification of Allen's lead method, which he employs. I therefore purpose trying it at a future time; but the results can scarcely be very accurate, and it is improbable that all tannins combine with gelatin in the same proportions. This last objection is technically of less importance, however, since the power of precipitating gelatin is probably somewhat proportionate to that of making leather.

Some years ago Fleck announced a method depending on the fact that while tannin, gallic acid, and coloring matter are all precipitated by cupric acetate solution, the two latter are redissolved by ammonic carbonate. He proposed, therefore, to employ a standard copper solution, and to estimate the excess by potassic cyanide. Dr. Watts showed that this was impracticable (owing to the fact, as I found, that cupric ammonio-gallate is not blue but brown), but that gravimetrically some tannins might be estimated with considerable accuracy, while others gave precipitates more or less soluble in the ammonic carbonate. The precipitate is complicated, and contains ammonia. Schiff gives its formula in the case of digallic acid as $C_{14}H_4Cu_2(NH_4)_2O_9+OH_2$ ("Ann. Ch. und Ph." clxxvi. 171), which would give 1 gram of tannin (digallic acid)=1·54 gram precipitate, and ·494 gram CuO. Watts, employing the number 1·489 (deduced from the assumption, now shown to be incorrect, that the salt was a simple cupric tannate), obtained analytical results fairly agreeing with those by gelatin for valonia, sumach, divi, oak bark, galls and myrobalans; and also for mimosa, by employing the number ·2959 instead of ·489. All tannins giving green precipitates with iron gave copper precipitates more or less soluble in ammonia.

No doubt this method, reckoning the tannin as two-thirds the weight of precipitate, or twice that of cupric oxide left on ignition, would give fair technical results; but it is unlikely that all the various tannins

actually combine with copper in the same proportions. In fact, as we shall see later on, the different tannins differ notably in their properties and reactions, only agreeing in their power of precipitating gelatin, and I fear tanners will have to give up all hope of measuring them by one common standard. Indeed, to a chemist, to do so seems about as reasonable as to compare the values of nitric and sulphuric acids by a standard solution of hydrochloric acid. Probably the differences between gallotannic, quercitannic and catechutannic acids are quite as great as those of the mineral acids I have named. Chemists may fairly undertake to compare sumach with sumach, or bark with bark, but the relative values of the tannins of bark and sumach are commercial matters which no analysis can decide, though it doubtless might be done by carefully conducted technical experiments.

The disadvantages of the copper method are that it is slow, troublesome and difficult, and that the washing and drying must be rapidly and carefully done, as the precipitate is easily decomposed. This difficulty might be overcome by igniting and weighing the CuO, but this can only be done easily in oxygen, as otherwise the copper is so much reduced that it is apt to deflagrate with nitric acid or ammonic nitrate. I think the best way is to filter on a vacuum filter, and dry in an air-bath (with a thermostat) at 100°.

The mean error of such result in a series of eight analyses of commercially "*pure*" tannin, containing apparently about 85 per cent. digallic acid by the total employed, was only $\pm$ 4·2 per cent., a much better approximation than any of the foregoing. It is not likely that the results with tanning materials would be quite so good. Analyses of bark showed considerable divergence, and combustion of the precipitate proved that it was somewhat inconstant in composition, the Cu varying from 21·6 to 25·4 per cent. I fancy, too, that for oak bark tannin two-thirds of the weight of precipitate is decidedly too high an estimate. It must also be borne in mind that if lime be present, as is often the case with tanyard liquors, it will be precipitated as carbonate. This might be prevented by filtering off the precipitate before washing with ammonic carbonate; but the method is troublesome enough without this, besides being of rather questionable accuracy.

Another process which has been much recommended is Mr. A. H. Allen's volumetric one, with a standard solution of acetate of lead, using as an indicator a mixture of ammonia and potassic ferricyanide.

This is described in the last edition of Sutton, but in its original form is quite inadmissible, since lead precipitates gallic acid as well as tannin, and both react equally on the indicator. In combination with some of the differential processes in which the tannin is removed by gelatin or hide raspings, it may no doubt give useful results, and as the lead compounds of the different tannins are better known than most others, possibly factors might be calculated to give percentage results. I cannot insist too strongly that any calculation of percentages by comparison with "pure" tannin is utterly fallacious, both because the various tannins are of totally different constitution, and because really pure tannin is quite unattainable. That met with in commerce only contains 80 to 90 per cent. of really pure tannin, and is very variable.

Mr. Stoddart uses Mr. Allen's process in conjunction with absorption of tannin with hide raspings, when of course the loss is *proportional* to the tannin. He also employs Nelson's gelatin swollen in cold water as an absorbent in the same manner. Time and patience are necessary for the absorption of tannin thus, and it is seldom so complete that the results are not altered by prolonged digestion. In my experience the end-reaction of Allen's method is not very distinct, and it is necessary carefully to filter the drops tested, as the indicator is affected by the precipitate. This makes the process somewhat tedious.

The remaining methods which I shall describe are all based on the oxidation of tannin by various agents, and all involve double analyses after absorption of the tannin, as tannin and gallic acid are almost identical in their behavior with oxidizers.

Mittenzwey, and afterwards Terreil, proposed to estimate it by the direct absorption of atmospheric oxygen in alkaline solution—a difficult and tedious proceeding, though doubtless capable of some accuracy in skillful hands.

Monnier proposed to determine with permanganate direct, but this proved quite impracticable, since the oxidation is rapid at first, and then slow and with *no* definite termination.

To Dr. Löwenthal is due the capital improvement, which, with his recent additions, constitutes to my mind the most practical method of tannin analysis yet discovered. He adds to the *very* dilute tannin infusion a considerable quantity of indigo, not only to act as an indicator, but to control the oxidation of the tannin. This reaction is both rapid and accurate, and, combined with his process of precipitation by gelatin,

will give results strictly comparative for any single tanning material. As it is likely to be of great practical importance, I venture to give working details, referring for further particulars to Löwenthal's paper in the "Zeitschrift für Analytische Chemie" (1877, p. 33), and to an excellent paper by Neubauer abstracted in the "C. S. Journal" (ix, 595).

Of solutions the following are required :

1.—4 grams pure permanganate of potash in 3 liters of distilled water (or $\frac{1}{2}$ decinormal answers well and saves calculation).

2.—5 grams of *pure* "precipitated indigo" in 1 liter of water.

3.—Dilute sulphuric acid (1 to 3 of water).

4.—25 grams of good transparent glue, well swollen in cold water, and then dissolved by the aid of heat. The solution is made up to a liter, and saturated with pure salt (table salt).

5.—A saturated solution of pure salt, containing 25 cc. of sulphuric or 50 cc. of hydrochloric acid per liter.

To make an analysis, 10 grams of sumach or valonia, or 20–25 of bark are exhausted by repeated boiling with portions of water, and the infusion, when cold, made up to 1 liter.

Of this infusion, 10 cc. are mixed with, say three-quarter liter of good drinking water, 25 cc. of the indigo solution, and 10 cc. of the dilute sulphuric acid are added, and then the permanganate solution is run in drop by drop from the burette, with constant stirring, till the deep blue of the indigo changes to a clear yellow, and the moment this takes place we note the quantity of permanganate used. We will call this quantity A.

Next we repeat exactly the same process with the indigo and sulphuric acid alone, and will call the quantity B. Then, subtracting B from A, we obtain the amount of permanganate consumed by the total astringents of 10 cc. of our tannin infusion. The permanganate acts, of course, as an oxidizing agent, oxidizing and consuming both the tannin and the indigo ; but as the tannin is the most readily oxidized of the two, it is consumed first, and when the indigo is all bleached we may be sure that the tannin is destroyed also. In order, however, to obtain this satisfactorily, the proportion of indigo should be such as to require about twice the quantity of permanganate which would be consumed by the tannin alone. Thus, if the indigo alone requires 10 cc. of permanganate to decolorize it, the indigo and tannin infusion together must not take more than about 15 cc., and if it does so, the tannin infusion must be diluted accordingly, or a less quantity employed.

The next step is to ascertain the proportion of gallic acid and impurities in our sample. To this end we mix 100 cc. with 50 cc. of our salted gelatin solution, and then, after well stirring, add 100 cc. of the salt and acid solution, and leave the mixture standing for some hours or all night, and then filter it through paper. The filtrate should be completely clear.

If we now test, say 50 cc. of this filtrate with permanganate and indigo as before, we shall obtain the amount of permanganate required for the gallic acid and impurities alone, since the tannin has been entirely precipitated, and the gelatin has so trifling an action on the permanganate that it may be safely neglected. To make the working clearer, we will take an example from Dr. Löwenthal's paper:

10 grams of sumach were boiled in three-quarters liter of water, and after cooling were made up to 1 liter.

(1) 10 cc. sumach infusion, 25 cc. indigo solution } consumed	16·6	cc. permanganate.
Do. repeated,	16·5	"
	33·1	"
50 cc. indigo alone,	13·2	"
Total permanganate for 20 cc. sumach,	19·9	"

(2) 50 cc. filtrate from the gelatin, 25 cc. indigo solution } consumed	11·2	cc. permanganate.
Do. repeated,	11·1	"
	22·3	"
50 cc. indigo alone,	13·2	"
Gallic acid and impurities,	9·1	"

Now, deducting 9·1 cc. from 19·9 cc., we have 10·8 cc. as the permanganate equivalent to the tannin of 20 cc. of sumach infusion, or 0·2 gram of dry sumach. If it be desired to compare two sumachs, these proportional numbers are all that is necessary, and indeed it will be quite safe to use them for comparing sumach with galls or pure tannin. In the same way bark may be compared with bark, and valonia with valonia, but it will not be safe to attempt by this means to compare bark with sumach or with valonia, because the different species of tannin consume different proportions of permanganate. Oser states that $1\frac{1}{2}$ gram of oak-bark tannin consumes only the same quantity as 1 gram of gall-nut tannin.

I may remark that where many analyses have to be performed, the

constant stirring becomes very tedious, and a stream of air-bubbles forced through the liquid by an aspirator may be substituted with great advantage.

Neubauer reckons one liter of decinormal permanganate as equal to 4·157 grams of gallotannic acid, and consequently (according to Oser) to 6·235 of oak bark tannin. Further research, however, is needed before percentages can be calculated with certainty, and chemists, in giving results, would do well to state the equivalent in permanganate, or to say that they use Neubauer's or Oser's equivalent. The first is applicable to sumach, galls and myrobalans, the second probably to oak bark, valonia and chestnut extract, at least approximately. It is a singular fact that gallic acid consumes not only a larger proportion of permanganate, weight for weight, than tannin, but even a larger proportion than the tannin from which it is derived, as I proved by digesting a solution of tannin with dilute sulphuric acid, when its reducing power was notably increased. Hence, commercial tannin, which is largely contaminated with gallic acid, consumes more permanganate than the above-mentioned quantity.

As to accuracy, single tests should never differ by more than 0·1 cc., or say $2\frac{1}{2}$ per cent. of the total quantity, but, of course, in so rapid a process, no one would rely on single tests, and by repeating and taking the mean any required accuracy may be attained. Separate portions of liquor precipitated by gelatin give identical results, at least within the limits named.

I should perhaps mention that Mr. Estcourt proposed some time since to precipitate with gelatin in conjunction with the permanganate method ("Chemical News," xxix, 110), but as he heated the solution, and tannate of gelatin is soluble in hot gelatin solution, the results were not satisfactory. Still he undoubtedly deserves the credit of the idea, while Löwenthal's cold gelatin solution, with the addition of salt and acid, completely overcomes the difficulty.

Several other oxidizing methods have been proposed. Carpeni precipitates the tannin with ammonio-acetate of zinc, redissolves and estimates with permanganate. M. Jean oxidizes with iodine in solution of sodic carbonate, and M. Pouchet with concentrated permanganate in a caustic potash solution. None of these methods seem to have any advantage over Löwenthal's, while the two latter are in my experience decidedly inferior. The end-reactions are much less distinct,

and it is quite impossible to work them by artificial light, which is almost preferable with the indigo process, and is often a great convenience.

In speaking of the results I have obtained as a test of the accuracy of methods, I do not mean to convey that they are the best attainable, but simply such as would be likely to be obtained by a chemist of average skill and experience.—*Phar. Jour. and Trans.*, June 16, 1877.

VARIETIES.

Milk-Beer.—A. Chevallier has discussed the subject of beer in general, and its importance as a question of public hygiene. He considers beer a very useful drink, containing many of the salts of nutrition, besides nitrogenous substances, easily assimilable, and especially an abundance of the elements that support respiration. After referring to the frequent adulteration of beer he speaks of this new product, *bière de lait*, as one destined to occupy an important place in alimentary hygiene; its manufacture rests on the same principle as that of other beer, except that milk is used instead of water in its preparation. It has a yellowish color and a density of ·980, a little greater than ordinary beer, which is ·950. Its taste is pleasant and less bitter than the generality of malt liquors. It contains about 5·5 per cent. of alcohol, and 9 per cent. of extractive, yielding 7·7 per cent. of its weight ashes.—*The Sanitarian*, April, p. 153, from *Jour. d'Hygiène*, Jan. 10.

Supposed Colchicia in Beer.—Danneberg has continued his researches on this substance ("Am. Jour. Phar.," 1876, p. 467), and found that if the residue obtained by Stas' method be dissolved in water, the solution precipitated by tannin, and the precipitate decomposed by oxide of lead, dilute alcohol will take up a body which produces precipitates with the general reagents for alkaloids, but does *not* show the reaction of *colchicia* with nitric acid, which could be easily obtained if 1 colchicia was added to 50,000 parts of beer. Gelatin, according to Danneberg, is not present in beer; the reaction is due to constituents of hops and malt.—*Arch. d. Phar.*, March, 238–246.

Gillenin.—Dr. H. M. Wetherill, in repeating the experiments of W. B. Stanhope ("Amer. Jour. Phar.," 1856, p. 200), obtained the same uncrystallizable body which the latter named gillenin, and corroborates the statement that it is emetic in the dose of half a grain, repeated if necessary. No additional light is thrown upon the nature of gillenin by Dr. Wetherill's thesis as published in "Phila. Med. Times," April 14.

Huber's test for free mineral acids consists of a mixture of ammonium molybdate and ferrocyanide of potassium. If some of this yellowish liquid is added to a clear, colorless aqueous solution, a reddish-yellow to dark-brown coloration or turbidity is at once produced in the presence of traces of free mineral acids (sulphuric, muriatic, nitric, phosphoric, arsenic, sulphurous or phosphorous acid); the color disappears instantly on the addition of excess of alkali. It is evident that salts other than of the alkalies and earths must not be present. Boric and arsenious acids do not produce the reaction.—*Pharm. Zeitung*, No. 19.

A new reagent for potassium is proposed by Prof. Mohr. It is a saturated solution of the acid tartrates of potassium and of sodium, the latter converting neutral potassium salts into cream of tartar, which is in a short time precipitated, since the liquid is already a saturated solution of this salt.—*Phar. Zeitung*, No. 20.

Analyses of Hair Dyes.—The London "Lancet" had recently twenty-one "hair restorers," "hair dyes" analyzed. Fourteen consisted of a solution of lead with sulphur in suspension, and many were described as "perfectly harmless." They varied in price from 25 cents to $1.50 per bottle. Two consisted of a solution of lead salt in hyposulphite of sodium; one was a solution of lead, free from sulphur compounds; another contained two bottles, one filled with solution of ammonio-nitrate of silver, the other with pyrogallic acid.

The remaining three preparations analyzed were intended for lightening, instead of darkening the color of the hair. No substantial difference between these samples was detected. Each was found to contain a tolerably concentrated and slightly acidulated solution of peroxide of hydrogen. It is well known that this is the active agent in preparations of this kind. It can hardly be considered as poisonous, but its action on the hair is said to be injurious.—*Med. and Surg. Reporter*, Feb. 17.

Manufacture of Volatile Oils.—We find it stated, in a German trade circular, that a so-called *liquid oil of orris* is much in demand in Europe, and that it is prepared by distilling the root after the addition of oil of cedar wood.

The manufacture of *oil of bitter almonds* having considerably increased in France the seeds of apricots have been imported from Asia Minor in considerable quantities to be used in place of almonds.

So-called *Moravian oil of anise* consists almost entirely of the stearopten of oil of fennel.

Oenotaera biennis (which part?) has been used by Dr. N. S. Davis, of Chicago, in more than twenty cases of asthma, associated with chronic indigestion or gastric irritability, and in all of them with more or less benefit. It was given in the form of fluid extract in doses of 20 to 30 minims, repeated every 3 to 6 hours, as the case may require.—*Amer. Pract.*, Jan., p. 14–18.

The formation of ethylic salicylate in wine has been noticed by Dr. H. H. Endemann. The wine (from Southern New Jersey) had been mixed with 1 grain of

salicylic acid for twelve gallons of wine (about 1 to 48,000) to prevent after-fermentation. The formation of the ether is due to the nascent alcohol produced by subsequent fermentation, which was not prevented by the small quantity of salicylic acid. Neubauer recommends for this purpose 1 part of the acid to from 16,000 to 50,000 parts of wine, and in this case the maximum quantity should have been used. —*Amer. Chem.*, vii., 217.

Brasilin, the chromogen of Brazil wood, has been experimented with by C. Liebermann and O. Burg, who obtained its hydrates in compact rhombic crystals and white silky needles. Deprived of water, it has the composition $C_{16}H_{14}O_5$, being 1O less than hæmatoxylin ($C_{16}H_{14}O_6$); various substitution compounds were prepared, and their composition indicated the correctness of the formula. *Brasilein*, the coloring principle, is obtained in glistening scales, by adding to a hot solution of 3 parts brasilin in 300 water, 2 parts iodine dissolved in 20 parts of alcohol; its composition agrees with the formula $C_{16}H_{12}O_5$.—*Ber. d. chem. Ges.*, 1876, p. 1883.

The detection of fuchsin in wine and fruit juices has been the subject of much investigation in Europe. Prof. Flückiger proposes a simple qualitative test, depending upon the behavior to chlorine and bromine, by which the coloring matter of wine and raspberries is instantly destroyed, acquiring a light yellowish color. A solution of fuchsin, diluted to a very faint coloration, becomes very perceptibly darker and discolored on the addition of chlorine water, and the vapor of bromine produces a rich violet color, or violet floccules after some time; the darker coloraion in both cases is lasting.—*Schweiz. Wochenschr. f. Phar.*, No. 11.

Prof. Schaer finds this darkening of color to be due to the presence of anilin or anilin salt; perfectly pure fuchsin acquires a pale yellow color under the circumstances mentioned above.—*Ibid.*, No. 13.

Niobe essence is crude methylo-benzoic ether, of an agreeable balsamic odor, and employed in perfumery. It is prepared by distilling a mixture of 1 part wood spirit, 2 p. benzoic acid and 2 p. oil of vitriol; the residue may be distilled with fresh portions of methylic alcohol twice or three times. The united distillates are treated and washed with water, then agitated with calcium chloride and rectified over dry oxide of lead. The same essence may be prepared from the calcium hippurate obtained from the urine of cattle, by distilling it with methylic alcohol and sulphuric acid.—*Apoth. Zeitung*, No. 12, from *Industrie-Blätter*.

MINUTES OF THE COLLEGE.

PHILADELPHIA, June 25th, 1877.

A stated meeting of the Philadelphia College of Pharmacy was held this day at the Hall of the College, No. 145 North Tenth street.

Dillwyn Parrish, President, in the chair. Nineteen members present.

The minutes of the last meeting were read and adopted.

The minutes of the Board of Trustees for the last three months were also read for information, and on motion adopted.

These minutes call attention to the report of a committee appointed by the Board to take into consideration the expediency of relinquishing the annual dues of such persons as shall have been members twenty-five years, and this report the Board directed to be referred to the College for its action thereon.

The matter was taken up by the College, and the report was ordered to be read. After a short discussion, the subject was postponed under the rules for further consideration at the next stated meeting of the College.

A letter from George Y. Shoemaker, resigning his right of membership in the College, was read. On motion, the resignation was accepted.

This being the time for an election of five delegates to represent the College at the annual meeting of the American Pharmaceutical Association, to be held in Toronto, Canada, on the 4th of September next, and also for three delegates to attend the conference of Schools of Pharmacy, at the same time and place, a ballot was ordered, and the tellers reported the following gentlemen elected, viz.:

Delegates to the American Pharmaceutical Association.

Dr. Wilson H. Pile. Dr. Adolph W. Miller. George W. Kennedy.
William McIntyre Albert P. Brown.

Delegates to the Conference of Schools of Pharmacy.

Prof. John M. Maisch. Prof. Jos. P. Remington. Charles Bullock.

On motion of Thos. S. Wiegand, the following resolution was adopted:

Resolved, That this College nominate and appoint a committee of eighteen members for the purpose of revising the United States Pharmacopœia, with a view of presenting their labors to the Convention meeting in Washington, in May, 1880

Mr. Wiegand advocated early action in the matter, as the committee would have much to attend to.

Prof. Maisch coincided with the views of Mr. Wiegand, and stated that the Philadelphia County Medical Society had already appointed a committee to take action in the matter. He moved that the committee be appointed by the President, Vice Presidents and Secretary, and announced at the next stated meeting of the College, which motion was adopted.

Then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary*.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Maryland College of Pharmacy.—At the monthly meeting held July 12th, the regular election of officers was had, resulting in the re-election of the former incumbents, as follows: President, Jos. Roberts; Secretary, Edwin Eareckson; Treasurer, Wm. E. Thornton; one of Board of Examiners, Louis Dohme.

Delegates to represent the College in the American Pharmaceutical Association, September, 1877—Louis Dohme, J. F. Hancock, Edwin Eareckson, F. Hassencamp, Joseph Roberts; Delegates to Conference of Schools of Pharmacy—Wm. S. Thompson, J. Faris Moore, N. H. Jennings.

Louisville College of Pharmacy.—At the Pharmaceutical Meeting held June 7, President Diehl in the chair, G. E. Bell was elected Registrar. An interesting paper on Spirit of Nitrous Ether (see July number, p. 352), was read by Prof. Diehl.

Attention was then called to the introduction of semi-proprietary medicines, by their manufacturers, to the notice of the medical profession, and to the burden imposed on the pharmacists through physicians, who make use of such compounds. The various commercial preparations of malt, different kinds of pills and granular effervescent preparations were also alluded to, and in regard to the latter it was suggested that perhaps a simple effervescent powder might be prepared which could be medicated at the pleasure of the physician at the time of dispensing. In connection with this subject, it was moved and carried that a committee on unofficinal formulas be appointed, which was constituted as follows: Dr. V. Davis, Prof. E. Scheffer, W. H. Garland, H. H. Rademaker and G. E. Bell.

Kentucky State Pharmaceutical Association.—We are pleased to be able to announce the organization of this body, which took place in the city of Frankfort on July 11. The new Association starts with a membership of 43, representing 16 cities and towns; a very auspicious beginning. The following officers were elected: President *pro tem.*, W. H. Averill, Frankfort; Secretary, W. G. White, Richmond; Treasurer, Peter Nodler, Covington.

The following committees were appointed and instructed to report at a meeting to be held in the city of Covington, on the first Wednesday of May, 1878: On Constitution and By-Laws—J. J. Frost, Peter Nodler, W. M. Stout, W. T. Courtney and W. M. Owen; on Notes and Queries—Jefferson Oxley, J. J. Frost and John Colgan; on Business for Next Meeting—G. A. Zwick, E. C. Reiss and Vincent Davis.

The Chairman and Secretary were by resolution directed to correspond with the druggists of the State, asking their co-operation in the movement, and to send circulars and blank applications to at least one druggist in each town of the State, requesting him to aid the Association in obtaining members.

By resolution, three dollars was fixed upon as the fee of admission into the Association, the amount to be sent with application for membership.

The Nova Scotia Pharmaceutical Society has recently been incorporated and empowered to appoint three, and the Provincial Government two Examiners, who together are to examine candidates for registration. All persons who, at the time of the passing of the Act, were actually in business as chemists and druggists, and all who at that time had served at least seven years at the business, are entitled to registration, on payment of a fee of four dollars, which must be continued yearly. Graduates of other Colleges are exempt from examination. The examination fee

is five dollars, and if successful, another fee of five dollars is to be paid, which entitles the candidate to registration, as a member of the Society. The Executive Council consists of twelve members and the following officers: H. A. Taylor, President; H. L. Atkins, Vice-President; A. Forsyth, Treasurer; W. H. Webb, Secretary, and J. H. Angiven, Registrar.

The German Apothecaries' Society will hold its sixth annual meeting at Leipzig, September 4 to 7, at which time a pharmaceutical exhibition will take place of new preparations, natural products, apparatus and utensils from the domain of pharmacy, physics, botany and hygiene.

EDITORIAL DEPARTMENT.

The American Pharmaceutical Association.—Before our next issue will reach many of our subscribers, the members of the American Pharmaceutical Association will be on their way to attend the twenty-fifth annual meeting, at Toronto, Canada. The general rendezvous of most of those intending to be present will be at Niagara Falls, where the *Cataract House* will be the headquarters, and where tickets for some localities of interest will be obtainable at lower prices, at the store of Hiram E. Griffith, M.A.P.A. Many members from the Atlantic, Southern and Western States will meet on the way to or at Watkins, on the evening of Wednesday, August 29, where the headquarters will be at the *Glen Mountain House*, already known to a large party of the Association, which stopped there in 1872. The exploration of Watkins Glen, Havana Glen and Hector Falls will occupy Thursday and Friday. The programme for Saturday will include a sail on Seneca Lake from its southern end at Watkins to its northern termination at Geneva, and the journey to Niagara Falls, where Sunday and Monday may be spent. Leaving Tuesday forenoon, by way of Lewiston and steamer on Lake Ontario, Toronto will be reached at 1.30 P. M., giving ample time for dinner and to attend the opening meeting at 3 o'clock. The headquarters will be at the *Rossin House*, and the sessions will be held at the City Council Chamber. The three hotels named will furnish first-class accommodations at reduced rates to the members and their families.

The contemplated pharmaceutical exhibition, it is earnestly hoped, will be well supplied from Canadian exhibitors as well as with articles which are of the *growth*, produce or manufacture of the United States, and only such are recommended to be sent. They should be addressed to the local Secretary, Mr. Henry J. Rose, and will then be admitted in bond and exhibited, and if not sold, may re-enter the United States *duty free*. Under existing regulations, such re-entry is effected with the least trouble at the port whence they were shipped (Suspension Bridge for instance), and the necessary formalities may be attended to by the person in charge of such goods. The local secretary should be notified on or before August 15 of the space required.

Members living on the lines of the Great Western or Grand Trunk Railways may obtain round trip tickets to Toronto and back at one and one-third ($1\frac{1}{3}$) fare.

After the close of the meeting an excursion into the country is contemplated, occupying one or two days, and which will afford opportunity for fishing and other recreations.

On the home trip the members will scatter; but the Secretary has been informed that some contemplate to return via Montreal, the White Mountains and Portland or Boston; others via Montreal, Lake Champlain and Lake George to Albany; others via Alexandria Bay (Thousand Isles) and Trenton Falls to Albany, and another party will return to Suspension Bridge and via New York Central Railroad to Albany, thence by the Day Line of steamers down the Hudson to New York. The latter party can obtain round trip tickets between Suspension Bridge and Toronto at two dollars. Excursion tickets to and via Niagara Falls, covering either route, are issued by most railroads.

Physicians and Pharmacists.—On various occasions we have dwelled upon the necessity of an amicable settlement of any differences of opinion or causes of complaint between the two professions, and but recently (May number, p. 269) we have referred to the commendable action in such cases of the physicians and the pharmacists of Antwerp and other Belgian cities, which is well worthy of imitation in this country. If such a spirit of conciliation had existed, the controversy between the two professions in Alleghany county, Md., would not have assumed its present shape, and much annoyance and ill-feeling would have been prevented. We learn that the Medical Society of that county has passed a resolution, declaring "that it is the duty of the members of this Society to withdraw their prescriptions from any druggist who puts up any nostrums, or who prescribes or recommends any patent or other medicines for any class of cases, whether grave or trivial." To this the druggists have replied by a resolution in which they will, "in the alleviation of suffering amidst all classes, pursue, as heretofore, the legitimate mode of conducting our own affairs."

There are just causes for complaints by both sides in many localities, both city and country. It is a cheap virtue to raise an outcry against the sale of proprietary medicines; but the manufacturers thereof know full well that the readiest way to introduce them and insure an extensive sale throughout the country is through the physicians, a large number of whom are easily persuaded to prescribe or use in their practice almost anything that comes to them under a plausible garb, from Warburg's Tincture and the various frauds, which, though wholly or mainly composed of cinchonia, sail under different colors, down to the active principles of the brain or of the gizzard. Such semi-proprietary medicines of a pretended composition, but which can be manufactured only by the proprietor of the secret, we consider to be far more dangerous than those barefaced impostures, which can be kept afloat only by the most liberal advertising in the secular and religious papers.

The so-called counter prescribing is another favorite hobby with some physicians who will not or cannot see the necessity of having recognized simple remedies for ordinary ailments. If such were agreed upon by the medical and pharmaceutical professions of different localities, such action would at once strike a blow at many nostrums of high and low degree, which are principally used in trivial cases. And

it is just in such trivial cases, like toothache, slight cough and the like, that patients will use domestic remedies before they apply to the dentist or the physician. Such counter prescribing it has been found impossible to suppress, even in those European countries where the whole power of the State could be brought to crush an evil, if evil it be; and it is our firm opinion that resolutions or threats, from whatever source they may emanate, will fare no better. Let the legitimate wants of the public be studied and recognized, and let both professions act harmoniously together, and the removal of a great amount of complaint will be the result.

If, on the other hand, injudicious quarrelling is preferred, the effect upon the public will be different from that expected by either party. A case in point is the controversy alluded to above, which is ridiculed by the "Baltimore Gazette" of July 10th in an article headed "Pill and Liberty," and which closes as follows:

"Meantime, it is fearful to consider the condition of the lungs, intestines, kidneys, diaphragms, livers, colons and knee-pans of the good people of Cumberland. Any disease, 'grave or trivial,' must be borne patiently until the fight is over. It is possible that some compromise might be made, for many things which were once nostrums are now the property of the medical profession—Hoffmann's anodyne, Dover's powders, and a hundred similar things. This might furnish the basis of negotiations, but until the battle is ended colics and catarrhs must be endured. There is no doubt that a learned prescription in the Latin of the period does powerfully influence the bucolic mind. A doctor once gave a nurse a very learned description of the malady of the patient, who received it deeply impressed, and confided to her friends that the patient must die, because the doctor said 'he had lost all the Latin part of his bowels.' There can be no doubt that the prescription: ℞ Tinct. camph. comp. ex. hydropipy, ʒ oz., must exert an effect beyond a simple 'blood purifier,' although possibly composed of the same ingredients. The druggists, however, have the side of free pills and liberty. Should the doctors subdue them they may advance next upon the venders of stimuli, and no man would be able to assuage the pangs of thirst unless he were armed with a legitimate prescription: ℞ Foliæ menthæ, sacch. alb., 1 oz.; spiriti vini otardi, 3 oz.; glacis pulv., quant. suf., et shakete violenter et suckite dulciter cum strawum. Shall this be? Never! The druggists have in their keeping the cause of liberty. The eyes of all Europe are upon them."

Dr. Heinrich Robert Gœppert will celebrate the fiftieth anniversary as academical teacher on September 27 next. At the date mentioned in the year 1827, he habilitated as private lecturer (Privat-Docent) at the University of Breslau, where he has successfully labored ever since. His former pupils intend, as a mark of veneration, to present him with an album containing their photographs. He is still actively engaged in the pursuit of his favorite science, botany.

Achlys triphylla, D. C.—A short time ago a correspondent sent us some specimens of a plant growing in *Washington Territory*. Having mislaid the letter we are unable to communicate directly with him, and therefore state in this place that the above is the botanical name of the plant. Should the plant be employed medicinally or otherwise, we would thank our correspondent for further information.

The Sale of Benzin and Naphtha.—We give room to the following communication advocating a very plain precautionary measure when selling very inflammable liquids. The general adoption of such a measure by druggists and apothecaries would seem not to be very difficult; but what precautions may be expected from grocers and other dealers who never label any article sold by them, yet dispose of much larger quantities of benzin than is done by the drug trade?

Editor American Journal Pharmacy:

In the light of the recent terrible explosion occurring in our city and resulting in the loss of two lives through the ignorance of the inflammable nature of benzin, is it not well in the common interest of humanity that the attention of the drug trade should be called to the precautions to be observed in dispensing this substance in common with all other light hydrocarbons? Not to dwell too long on the case in point, the facts are these: A gentleman living in the upper section of our city purchased five gallons of benzin, and taking it home, emptied it into a watering pot, such as is used for horticultural purposes, and carefully (?) sprinkled the carpets, furniture, etc, of the parlor, the object being to prevent or destroy the moth.[1] Can we conceive of anything more hazardous? A draft of air carrying the vapor of the volatile liquid through the doorways left open by the servant, communicated it with the fire of the kitchen, and the result is the death of two persons in the most intense agony. It is obviously a case of "no one to blame."

Let it not be thought that this is an exception. A few weeks ago we remember a similar accident in a neighboring city, where several gallons of this liquid was sprinkled about the room by gas light. Need we chronicle the result, or say that the woman whose interest in the ravages of the pestilent moth, occasioned her death, should have been more careful! Let any one of our pharmacists inquire of his friends and acquaintances, or his customers, and he will be astounded at the prevalence of this custom, and the small number of accidents, considering the most utter indifference to and ignorance of the inflammab'e and explosive character of benzin, naphtha and similar liquids.

If there is a remedy for this, it becomes us, as professional men, conservators of the public health, as in a measure we are, to provide it; and we would therefore strongly suggest that whenever a liquid of this nature is dispensed or sold, *a label shall invariably accompany it, printed in plain, bold type, warning all purchasers distinctly and imperatively of the danger incident to its use.*

We may in this connection note a practice becoming very prevalent of late, which is that of young women purchasing a pint or more of benzin or naphtha for the purpose of cleaning kid gloves. We may add that this practice is more frequent among the poorer classes, and that their custom is, of necessity, very generally to do work of this kind in the evenings after their return from their daily employment. How many poor girls passing unscathed through the mills and factories and laboratories covet death innocently and ignorantly through the necessity of "making both ends meet" on a starvation salary, we can never know; but we repeat that it is only our duty—nothing more nor less—that we should guard them and the public in so far as possible against the occurrence of similar accidents.

Since writing the above we have heard of a case illustrating the same, which, not to trespass longer than the importance of the subject deserves, we will narrate: A young woman employed in an Eighth street store was a few evenings since cleaning her gloves with naphtha, by gas light. Having them on her hands, the naphtha caught fire, and the result was that her hands were so severely burned as to preclude the use of them for several weeks, with a possibility of crippling them for life. Do we need more warning?

RICH. V. MATTISON.

Philadelphia, June 9, 1877.

The sale of arsenic is restricted in most States in the Union, only in so far as it must be made to known adults, and properly registered in the *poison book*; if the package is also labeled with the name of the article and the word "poison," the legal responsibility of the dealer ceases Recently a case of fatal poisoning occurred in this city, a young lady taking a quantity of arsenic instead of magnesia, which was done up in a similar paper and properly labeled. Although such cases of carelessness are of rare occurrence, yet even these might be avoided if the arsenic was colored, so that it could not be mistaken for sugar or other harmless substances. The custom of many pharmacists to add to rat's bane a small quantity of charcoal is a good one, but a more striking color is produced by the addition to arsenic of one per cent. each of ferrous sulphate and potassium ferrocyanide, both in the state of fine powder, as recommended in our last volume, page 217.

[1] At the Coroner's investigation it was testified that the benzin was purchased at the store of a dealer in spirits and oils (not from a druggist), and that the can was labeled *parlor oil, non-explosive.* The jury appended to their verdict a "desire to call the attention of the proper authorities to the sale of the dangerous explosive which is sold as safe and harmless;" but they did not state whether they considered anybody to blame.—EDITOR.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Medicinal Plants; being Descriptions with Original Figures of the Principal Plants employed in Medicine, etc. By Rob. Bentley, F. L. S., and Henry Trimen, M. B., F. L. S. Philadelphia: Lindsay & Blakiston.

Parts 20 and 21—Part 19 has not been received yet—are of particular interest to the American pharmacist and physician, containing, as they do, full accounts of not less than six North American medicinal plants, and, in addition thereto, of several others indigenous or cultivated in the tropical parts of the Western hemisphere. The following plants are described and figured: Aloe vulgaris, Areca Catechu (betel-nut palm), Arenga saccharifera (sago palm), Boswellia Carterii (frankincense tree), Chenopodium anthelminticum, Eupatorium perfoliatum, Ferula sumbul, Hedeoma pulegioides, Monarda punctata, Pimenta (Myrcia) acris, Pim. officinalis, Plantago ispaghula (spogel seeds of India), Sambucus canadensis, Simaruba amana and Xanthorhiza apiifolia.

Recherches pour servir à l'histoire chimique de la racine de gentiane; présence d'un tannin. Thèse présentée et soutenue à l'école supérieure de pharmacie de Montpellier le 18 Mai, 1877. Par Jules Ville. Montpellier. 4to, pp. 56.

Researches on the Chemical History of Gentian Root, regarding the Presence of a Tannin.

These researches were prompted by the discussion last year between E. L. Patch and J. M. Maisch in relation to the same subject. The author arrives at the same conclusion previously maintained and proven in this country, that the dark coloration or even precipitation produced by ferric salts in liquid preparations of gentian is due to gentianic (gentisic) acid; but he regards this principle as a kind of tannin and proposes for it the name of *gentianotannic acid.* In his review he has scarcely done justice to the observations made by Patch and Maisch, neither of whom worked with the compound tincture of gentian, but with the simple tincture and the infusion. That these are precipitated by gelatin has been noticed before, but that this precipitate after washing with water retains none of the gentianic acid is ignored by the author. His most important experiment for sustaining his position was performed by mixing 20 grams of a solution of gentian with 20 grams of fresh, well-scraped and cut skin, of which the hairs were shaved off. The mixture was tested from time to time with ferric chloride, the coloration becoming less intense, and after eight weeks ceased altogether. Bitter orange peel treated in the same manner yielded the same coloration at the expiration of this time as at the beginning. In attempting to observe the effect of gentian in making leather, the author was satisfied with the properly prepared skin presenting *des traces très-apparentes de tannage* after a contact of one month. The author refers also to the investigation of gentisic acid by Hlasiwetz and Habermann ("Am. Jour. Phar.," 1875, p. 207), and points to the similar decomposition of moritannic acid; but it should be borne in mind that protocatechuic acid (the isomer of gentisinic acid) as well as phloroglucin are produced from numerous substances which are not tannins. The differ-

ence between physiological and pathological tannins, as assumed by R. Wagner (1866) and referred to by the author, has, we think, been completely disproven by Dragendorff.

The position of the author, though it may be sustained by future investigations, has, in our opinion, not been proven.

We may state yet that, as far as we are aware, gentian and ferric salts are, in the United States, not considered incompatible, on the contrary, are frequently prescribed together, and a permanent liquid form, free from inky appearance and taste, the ferrated elixir of gentian, has been used here for more than ten years.

Report of the State Board of Pharmacy made to the General Assembly of Rhode Island. 1877.

During the year 1876 the Board examined and passed seven "assistant pharmacists," and of eighteen applicants to become "registered pharmacists" ten were granted registration on the first, two on a second and two on a third examination, and the remainder were refused.

Proceedings of the Georgia Pharmaceutical Association at the Second Annual Meeting, held in Atlanta, Ga., April, 1877. Also, the Constitution, By-Laws and Roll of Members. Atlanta. 8vo, pp. 90.

The little volume before us speaks well for the Association whose proceedings are recorded therein. Besides the addresses of President L. W. Hunt and Messrs. W. A. Taylor and T. A. Cheatham, we find an address by Mr. Th. Schumann, delivered at the first annual meeting, in which the author advocates proper pharmaceutical education, argues in favor of the pharmacist to be educated by the pharmacist, and urges combined exertion with the view of taking care of our interests in legislation.

Of the papers read at the second meeting, one by Mr. Th. Schumann compares the various pharmacy laws and proposes some amendments to the Georgia law, while another dwells on the effect of the patent medicine trade and urges as the only effective remedy: "Elevate the profession—educate the young pharmacists well—educate them to the standard." W. B. Addington describes his method of making phosphorus pills by dissolving the phosphorus in carbon bisulphide before incorporating it. O. Butler pronounces in favor of coated over compressed pills, and claims sugar as a coating superior to gelatin. P. J. Schumann discusses the best means for detecting the various adulterations of wax, and T. A. Cheatham makes some remarks on the so-called bromo-chloralum without solving the question in regard to its asserted superiority as a disinfectant over aluminium chloride. As an evidence of the commendable spirit of the Georgia Association, we cannot refrain to make room for the following protest, which was adopted and presented to Hon. Cinc. Peeples, Judge of the Superior Court of Fulton county, Ga.:

"Considering that Pharmacy is a science for itself—an independent branch of the natural sciences; considerng that Pharmacy has nothing to do with the different theories and schools of medicine; that a pharmacist ought to be able to prepare medicines of the mineral or vegetable kingdom in the proper manner, according to

the rules laid down by the science of pharmacy, be that medicine prescribed by a physician of one or the other school, be it administered to a patient according to either theory in medicine; considering that a good pharmaceutical education can only be obtained through well-educated pharmacists, that only well-experienced pharmacists, who devote their time and power to study in their own profession, can make good teachers in their profession; that a physician cannot be, as a rule, and, according to the nature of the case, a good pharmacist, much less a desirable teacher of pharmacy; considering that in all civilized countries the instruction and education of pharmacists are left to pharmacists or to such persons who make different branches of pharmacy, chemistry, botany, pharmaceutical materia medica, toxicology a special study; considering that an imperfectly established school of pharmacy will only retard the establishment of a good institution of this kind—will do more harm than good by granting degrees to incompetently educated persons; considering that there are good schools of pharmacy in the Northern and Southern States, and the establishment of imperfect schools would be a disgrace to the State and no advantage, and that any school of pharmacy connected with, and being an appendix to, any medical college can only result in neglecting the education of pharmacists and in granting licenses to incompetent persons; considering that it would be very difficult to find a physician who would be able to give effective lectures and good instruction in pharmacy, chemistry, botany, toxicology and other branches of pharmacy:

"The undersigned members of the Pharmaceutical Association of the State of Georgia do herewith protest against the establishment of a school of pharmacy connected with and appended to any medical college of any denomination, and especially connected with the Georgia Eclectic Medical College, and petition the Court to strike from its charter anything relating to a school of pharmacy or to diplomas in pharmacy."

The Association of American Medical Colleges; History of its Organization, its Constitution, By-Laws, Articles of Confederation and List of Members. Detroit, 1877. Pp. 26.

A convention of representatives of American medical colleges was held at Philadelphia in June, 1876, at which several questions relating to medical education were discussed. A permanent organization was effected at Chicago in June last and was at once joined by twenty-three medical colleges. The objects are "the advancement of medical education in the United States, and the establishment of a common policy among medical colleges in the most important matters of college management." In its objects and organizations the association is similar to the "Conference of Schools of Pharmacy," which held its initiatory meeting at Baltimore in 1870, and was permanently organized at St. Louis in 1871.

Remarks on Sulphate of Quinia. By Alexander H. Jones. 8vo, pp. 16.

The pamphlet is intended to meet the arguments and often misrepresentations of those who would have Congress repeal the duty of 20 per cent. now collected from quinia of foreign manufacture.

Addresses of the Special Committee of the Chamber of Commerce of the State of New York on Customs Revenue Reform; delivered June 4th, 1877, at the Rooms of the Chamber of Commerce of the State of New York, before the Commission appointed to Investigate the New York Custom House. Pp. 72.

The title of the pamphlet explains its aims, to promote reforms in the customs service of the country.

Pettingill's Newspaper Directory and Advertisers' Handbook for 1877; comprising a complete List of the Newspapers and other Periodicals published in the United States and British America. New York: S. M. Pettengill & Co. 8vo, pp. 334. Price, $1.

The directory gives information such as is desirable to advertisers about nearly 8,600 periodicals. Notwithstanding the evident care bestowed upon the compilation, some of the scientific journals appear to have escaped the editor's eyes.

Notes on the History and Climate of New Mexico. By Dr. Thos. A. McParlin, Surgeon U. S. A. Washington, 1877. 8vo, pp. 28.

This very interesting report was communicated by the Surgeon-General, U. S. Army, and appeared in the Smithsonian Report for 1876.

On the Surgical Complications and Sequels of the Continued Fevers. By Wm. W. Keen, M. D., of Philadelphia. Washington: Smithsonian Institution, 1877. 8vo, pp. 68. Price, 25 cents.

This is the fifth of the Toner lectures, instituted to encourage the discovery of new truths for the advancement of medicine. It was delivered February 17, 1876.

History of a Case of Recurring Sarcomatous Tumor of the Orbit in a Child, extirpated for the Third Time, and ultimately Causing the Death of the Patient. By Thos. Hay, M. D., of Philadelphia. Lindsay & Blakiston, 1877. Price, 50 cents.

A reprint from the report of the Fifth International Ophthalmological Congress, held in New York September, 1876, and illustrated by three lithographic plates.

On the Diagnosis of Urethral Stricture by Bulbous Bougies, with Illustrated Cases. By J. Wm. White, M. D., Lecturer on Venereal Diseases in the University of Pennsylvania. Philadelphia: J. B. Lippincott & Co.

A reprint from the Philadelphia "Medical Times" of May 26th, 1877.

A Case of Abdominal Pregnancy Treated by Laparotomy. By T. Gaillard Thomas, M. D., New York.

Reprint from "Gynæcological Transactions," 1876.

The Prophylactic Treatment of Placenta prævia. By Prof. T. Gaillard Thomas, M. D.

Reprint from the "American Practitioner," May, 1877.

Transactions of the Medical and Chirurgical Faculty of Maryland at its Seventy-ninth Annual Session, held at Baltimore, Md., April, 1877. Pp. 190.

THE AMERICAN

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SEPTEMBER, 1877.

THE RELATIVE VALUE OF COLCHICUM ROOT.

By Theodore F. Beckert, Ph.G.

(*From an Inaugural Essay.*)

This subject was suggested by several pharmacists, who of late have found it a difficult matter to obtain colchicum root which on breaking presented a clear white color. The recently imported article, as obtained from the wholesale druggists, consisted of tubers which had been sliced very irregularly. Out of a one pound lot not less than seven whole tubers were taken, the remainder varying from one-sixth to one-half inch in thickness. These pieces, when broken, presented quite a varied appearance, their color being all shades between white and black; and it was noticed that the lighter colored roots were mostly easy to break, and many of them of a mealy character, whereas the darker ones were difficult to break, and had a somewhat resinous appearance. A quantity of the root was broken piece by piece, and then separated into three grades, according to color, white, slate-colored and brown or blackish, particular care being taken in the sorting. Upon weighing, it was found that the white root constituted only one-sixth, while the gray root comprised not quite two-sixths, and the black root a little over three-sixths of the article examined. These results also agree with the observations of several resident pharmacists.

The methods used to determine were as follows: Two troyounces of each of the three grades of roots were exhausted by means of alcohol, yielding in each case about twelve fluidounces of tincture; these tinctures varied in color according to the grade of root used, that from the white root being lightest. This indicates the solubility in the alcohol of the foreign coloring matter present in the gray and black roots. In preparing these tinctures, care was taken to percolate them under as similar circumstances as possible.

The tinctures obtained were separately evaporated by means of a water bath, the residue was treated with distilled water, and poured upon a filter, in order to separate resinous matter; the filtrate was washed with slightly acidulated water until each filtrate measured 100 cc. Dilute sulphuric acid was used for acidulating the solutions, which were volumetrically tested with Mayer's solution, in quantities varying from 5 to 15 cc. In the preliminary experiments the solutions were variously diluted, and it was observed that the results were very considerably influenced thereby, an observation previously made by Dragendorff. To serve as a basis for comparison, the experiments were afterwards made with solutions of uniform strength, as stated above, partly without any other addition, and partly as recommended by Dragendorff, after the addition of a concentrated solution of chloride of sodium, to increase the distinctness of the reaction. The three grades of the root required for 1 cc. respectively ·0403, ·0414 and ·0462 of Mayer's solution.

Five troyounces of each of the roots were next exhausted by alcohol, percolation in each case being carried on until the liquid passed tasteless. The alcohol was evaporated, and the residues were treated with water, filtered and precipitated by a solution of tannin. These tannates of the white, gray and black roots, which, after having been dried, weighed respectively ·32, ·265 and ·27 gram, were decomposed by oxide of lead, and then treated with alcohol, in order to separate colchicia. The three alcoholic solutions were carefully evaporated to dryness, then placed over sulphuric acid for several days, and then their weight taken; the product from the gray root weighing ·115 gram, the black yielding ·104 gram, while the product from the white root was unfortunately lost.

I next obtained same colchicum root from Professor Maisch, which was not less than ten years old, it having been in his possession at least nine years. It had quite a handsome appearance, very little dark root being present, and in all respects was a much better looking article than that previously employed. Two troyounces of this root were treated as stated above, and an acid solution obtained, measuring 100 cc., and which, when treated with Mayer's test, in a similar manner as before, required ·0300 for the precipitation of 1 cc.

The various results thus obtained are more concisely presented in the following table:

	1st grade or white root.	2d grade or gray root.	3d grade or black root.	Very old root.
Mayer's solution necessary to precipitate 1 cc. of the solution, . .	·0403	·0414	·0492	·0300
Percentage of alkaloid in air-dry root,	·205	·210	·219	·152
Tannate precipitate obtained from five troyounces of root, ...	·320	·265	·270	
Amount of crude colchicia obtained from the tannates, ...	lost.	·115	·104	

By the above table it will be seen that the results obtained with tannin and by Mayer's solution do not agree as to the amount of colchicia indicated. This may be due to the slight solubility in water of the tannate of colchicia, as noticed by Hübler and others, and to the varying amount of water used in the last experiments. But the results seem to indicate that it apparently matters little whether the root has a white, gray or black color, but that the *age* is of primary importance, and none but a fresh-looking root should be purchased; if this is done I think no fault can be found as to the quality of the preparations made from it.

COLCHICUM SEED.

By Nathan Rosenwasser, Ph.G.

(*From an Inaugural Essay.*

The author prepared the active principle of the seed, and found it to have a neutral reaction to test paper, and to be not precipitated from aqueous solutions or solutions acidulated with organic acids, by potassio-mercuric iodide, sodium phospho-tungstate, auric chloride, phosphomolybdic acid and solution of iodine,[1] all of which reagents afforded precipitates after the solution had been acidulated with a mineral or oxalic acid, or had been boiled for a few minutes with acetic acid; he argues from this that the principle is naturally neutral, and is converted into an alkaloid by the influences mentioned.[2] The neutral substance, colchicin, was with some difficulty obtainened in crystals by the slow

[1] Ludwig (1862) obtained a thick precipitate with auric chloride, readily soluble in excess, and Eberbach (1874) found the aqueous solution of his colchicia, which had a distinct alkaline reaction, to be precipitated by the three last reagents mentioned above.—Editor.

[2] *Colchicein* is formed under these circumstances, which combines with bases, but not with acids.—Editor.

evaporation, in deep vessels, of its solutions in fusel oil and benzol, and found to be insoluble in *pure* ether, carbon bisulphide and petroleum benzin.

It having been asserted that the active principle resided chiefly in the outer integuments of the seed, and that for this reason they could be almost completely exhausted without being ground, the author experimented with 5,000 grains of unbroken seeds, macerated them in diluted alcohol in a warm place for ten days, and washed them well with diluted alcohol; the tincture and washings were used for preparing colchicin by Carter's process ("Am. Jour. Phar.," 1858, p. 205), of which five grains was obtained. The same seeds afterwards crushed to an uniform powder yielded eleven grains colchicin. 5,000 grains of seeds of the same lot were ground, and yielded sixteen grains; and 14,000 grains of the same seeds, rolled and crushed, yielded forty-five grains of colchicin. It follows, therefore, that only less than one-third of the colchicin present can be exhausted from the unbroken seeds. In preparing colchicin, particularly in warm weather, it is found unnecessary to remove the fixed oil by filtration previous to precipitating the colchicin by tannin; it is better to collect the precipitate, dry it carefully by means of a water bath, and then exhaust the oil by gasolin. For the decomposition of the tannate, aluminium hydrate seems to possess decided advantages over ferric or plumbic hydrate, it serving at the same time as a decolorizing agent.

When distilling the alcohol from the tincture, the odor of the *ground* seed was distinctly recognized in the distillate, which turned milky upon the addition of water. On distilling a pound of the ground seeds with water, an aromatic distillate was obtained, but a volatile oil, which probably exists in minute quantity, could not be separated. The distillate was tested for alkaloids with a negative result.

Flückiger and Hanbury give 6·6 per cent. as the amount of fixed oil present in the seeds; the author obtained 14 drachms (8·4 per cent.) from 10,000 grains of the seeds. After purifying it by treatment with benzin and animal charcoal, it had a light-brown color and a bland taste. It was found to be readily saponifiable.

ON A NEW PROCESS FOR THE PREPARATION OF EXTRACTS WITHOUT HEAT.

BY PROFESSOR ALPHONSE HERRERA.

Since the progress of organic chemistry has made us acquainted with many proximate principles of plants and their various properties, the processes for most medicinal preparations have been considerably improved, and diverse apparatus and methods have been designed with the view of obtaining them in a more energetic form and of preventing the alteration of the proximate principles, as well as to secure greater economy and a more convenient form for their administration. Of all the medicinal preparations none have attracted more the attention of the pharmacists than the extracts, which offer the advantage of being conveniently administered, and, if well prepared, of representing in a small bulk the properties of the drugs. By the action of heat and air the organic principles are generally more or less altered, and hence in the ordinary way of preparing extracts, the active ingredients are more or less modified, or if volatile, evaporated, and the preparations do not fully represent the drug. To obviate this difficulty, it has been proposed to evaporate the liquids at a rather low temperature, and if possible excluded from contact with the air, and with these objects in view, ingenious apparatus and contrivances have been adopted: like evaporating in many capsules heated by steam, as in the process of Henry; or keeping the liquid continually in motion to promote the evaporation, as in the process of Bernard; or effecting the concentration in vacuo by means of special apparatus, constructed by Laurent, Granval, Berry and others.

I do not propose to discuss the advantages or disadvantages of the different methods proposed, for they are well known. It merely remains to state that the best results have been obtained by evaporation in vacuo, in which process the exclusion of air and the low heat prevent any great alteration of the soluble principles; but the high price of such an apparatus is a great obstacle to its general use.

For many years, sodium chloride and ice have been employed in Europe with the object of utilizing the property of water when freezing to separate the salts which are contained in solution. In 1862 Robinet presented to the Paris Academy of Medicine a memoir, in which he demonstrated the application of this behavior in the analysis of waters. Afterwards Mr. Ossian Henry has applied it to the concentration of

mineral waters for the purpose of facilitating its transportation. I have utilized the same property for the concentration of vegetable juices, and in general, of aqueous solutions of organic principles.

The results of my observations have satisfied me that, when the water partially congeals, the dissolved principles remain in solution in the mother liquors, and that two or three congelations are generally sufficient for obtaining the solutions concentrated enough to finish the extract by exposure upon plates to the heat of the sun or of a drying closet, heated to about 30°C. (86°F.) The extracts prepared by this method accurately represent the properties of the plants, and the principles which are changed by the influence of heat remain unaltered; even the volatile constituents are not dissipated, though most of the water be removed by freezing. Owing to the small cost of the necessary apparatus, it appears to me that my process for preparing extracts should be preferable even in those countries where ice is less readily obtainable than combustibles.

Extract of conium, prepared with unpurified juice by the process mentioned, has preserved the characteristic odor of conia, and by dissolving it in water I have obtained a solution exactly representing the juice of the plant in appearance and properties, and giving, when heated, an abundant coagulation, proving that even albumen had remained unaltered. 1750 grams of cow's milk, of 9° B., left, after three congelations, 750 grams of a liquid having a density of 14°, and by evaporation in the sun this left a dry extract of milk, which again formed that liquid on being dissolved in water. A number of other liquids, similarly treated, gave corresponding results, and it seems to me, therefore, that medicinal extracts are best prepared by congelation. It may be objected that the vegetable juices should be previously purified; but it should be remembered that coagulated albumen always encloses a considerable portion of the active principles, and that the heat necessary to effect the coagulation and the evaporation by means of a water bath is sufficient to change many principles; also, that the extracts thus prepared are sometimes inert or less active. The careful experiments made by Orfila and the clinical experience of others demonstrate that extracts prepared with unpurified juice are stronger.

The results of the experiments just mentioned will show that my process may be advantageously used for the preservation of vegetable juices, which are obtained by dissolving the extract in sufficient water

until the solution is of the same density as the natural juice. The method is also advantageous in the preparation of syrups in serving to properly concentrate the liquors from which the syrups are made.

For the extracts prepared from juices by the method indicated, the author proposes the designation of *opopycnols* (opopicnolées), derived from the two Greek words *οπος*, the juice, and *πυκνοω*, to condense.

In obtaining artificial extractive solutions, the process of infusion should be used, unless the active principles are sparingly soluble in water, in which case digestion or even decoction may be resorted to, but in whichever way obtained, the solutions are treated alike for preparing the extracts. Extract of rhatany, prepared by the process of congelation, dissolves completely in water, with a red color, and has a much more astringent taste, compared with the extract which was prepared with the utmost precaution by evaporation in a water bath. Similar comparisons were made with the extracts of catechu, aloes and others, and in all cases a very notable difference was observed, which is explained by the final evaporation in the proposed process being conducted by the heat of the sun or of the drying closet, which is insufficient to effect a change or to volatilize the volatile principles in anv appreciable degree.

The apparatus employed by me is the so-called *sorbetière*;[1] for larger quantities the apparatus of Gougaud is preferable. The frigorific mixture is composed of ice and sodium chloride, or preferably of crystallized calcium chloride. After a large portion of the solution has congealed, the mass is enclosed in a cloth and subjected to pressure, the presscake of ice is broken and again pressed, to separate the mother liquor as completely as possible, and the congelation is repeated two or three times, with the precaution that it be not carried far enough to cause the precipitation of the sparingly soluble principles. The mother liquor is then put into shallow dishes and exposed to the heat of the sun or of a drying room, the temperature of which does not exceed 30°C. (86°F.) until the extract has attained the desired consistence.

In conclusion, it may be stated that the concentration of aqueous solutions by congelation appears to be preferable

1. For the preparation of aqueous extracts in general.

[1] Similar to the apparatus used here for making ice cream.—EDITOR.

2. For the preparation of syrups containing juices, in which case the concentration should be carried far enough that after mixing with the simple syrup the requisite density is obtained.

3 For the conservation of juices, and

4. For chemical analysis the process may be used with advantage.

FRACTIONAL NOTES.

By Hans M. Wilder.

Honey in Tinctures.—Tinct. cardam. comp. and Tinct. opii camph. both contain honey. Since the proportion is so small (1 : 20 and 1 : 16) that it cannot be of any moment, neither therapeutically nor as a flavoring agent, might the honey not be replaced by simple syrup?

Tincture Stoppers.—None of the least disagreeable things which we have to contend with (especially when we are in a hurry) is the loosening of glass stoppers which have become cemented (as it were) to the neck of the bottles. This can be entirely prevented by rubbing the stoppers with a piece of paraffin and giving them a turn in the neck of the bottle, so as to distribute a thin coating of paraffin all over. Two or three times a year this coating has to be renewed (at all events seldom enough not to occasion any trouble). Paraffin may practically be considered insoluble in the different menstrua of the tinctures.

Syrupus Giberti.—Having of late very often had to prepare it, and not finding the formula in American pharmaceutical journals, I herewith give it as communicated to me by the physician. 2 grains red iodide of mercury and 100 grains of iodide of potassium are dissolved in 2 fluidrachms of water, and simple syrup added up to 6 fluidounces. This is somewhat stronger than the original formula, which adds syrup up to 10 troyounces.

Hydrated Oxide of Iron.—The U. S. Pharmacopœia precipitates solution of tersulphate of iron with water of ammonia, and washes it on a muslin strainer. In cases of emergency, the Pharmacopœia permits only to press the precipitate as much as possible on a strainer. Having had to make it of late in three cases of arsenic poisoning, I found the procedure of the German Pharmacopœia quicker and easier. Sixty parts solution of tersulphate of iron is mixed with 120 parts of

of water, and precipitated by a mixture of seven parts calcined magnesia and 120 water. Shake well together and dispense. In arsenic poisoning, certainly no objection can be found against the presence of sulphate of magnesia.

Copaiva in Pills.—The U. S. Pharmacopœia makes a pill mass by adding one drachm calcined magnesia to two troyounces copaiva, which mixture after several hours becomes solid enough to be made into pills. Unhappily these pills are so seldom prescribed that few apothecaries keep them ready made, and have to make them when called for. By using as much calcined magnesia as balsam of copaiva, a mass will be obtained which has sufficient consistence to enable it to be rolled out at once. (The addition of one drop of water to each drachm of balsam facilitates the solidification.) If it is found desirable to prevent these pills from becoming stone-hard, Hager in his "Praxis" recommends the addition of beeswax: 200 copaiva, 20 beeswax, 10 calcined magnesia, 2 water. Pills, or rather boles, of copaiva and cubebs are often prescribed by the German physicians. The German apothecaries have for many years kept ready on hand a mixture of 1 beeswax and 2 copaiva, of course taking a corresponding quantity of said mass (2 balsam = 3 mass) to make the boles.

Speaking of balsam of copaiba, I cannot forbear mentioning that I have lately had to make suppositories, *each to contain one drachm of the balsam* (no mistake!). By melting 3 parts of beeswax (in summer time) and adding 1 part of copaiva I got a plastic mass, none too hard; it is true each suppository was about two inches in height and one inch broad at the base, and it is needless to say that the (male) patient did not feel at all comfortable.

Lycopodium in Mixtures.—In order to make lycopodium miscible with water it becomes necessary first to rub it dry under strong pressure (to powder it, as it were) before adding the water. A little alcohol (1 : 16) much facilitates the rubbing, and dispenses with the extra pressure. The lycopodium has to be rubbed until it forms a granulous mass.

Volatile Liniment.—In one of the earlier volumes of the "Pharmacist," R. Rother recommends the addition of a little oleic acid to the liniment of the Pharmacopœia. This is a good idea; it prevents the separation, so familiar to all, keeps it from solidifying, and makes it

quite white. By the use of oleic acid it matters not what kind of oil is taken; 6 to 10 drops to the pint of liniment is sufficient.

FORMULAS and PREPARATIONS of new MEDICAMENTS.

BY THE EDITOR.

(Continued from page 351.)

Ferrocyanhydrate of Quinia.—Four parts of quinia sulphate and enough distilled water to form a not too thick mixture are mixed with a concentrated solution of one part of ferrocyanide of potassium, the whole is heated to boiling for a few seconds, and then allowed to cool. The mother liquor, from which more of the salt is obtained on concentration, is poured off from the resin-like mass, the latter washed with hot water and crystallized from boiling alcohol. It is in small yellowish needles, bitter, slightly soluble in water, freely in alcohol, and efflorescent in the air.

Bromhydrates of Quinia.—The *basic* salt is obtained by heating 10 grams of quinia sulphate with 80 grams of water to boiling, and adding 3·40 grams dry barium bromide, dissolved in 20 grams of water; the sulphate of barium is filtered off and the filtrate evaporated and crystallized. It forms silky needles, which require 60 parts of cold water for solution.

The *neutral* salt is made in a similar manner, except that the quinia is dissolved by the aid of just sufficient sulphuric acid, and 6·80 grams of barium bromide, dissolved in 25 grams of water, are used for decomposition; the mixture is heated to boiling, filtered, the filtrate evaporated to 35 grams, and crystallized. It crystallizes in handsome prisms, which are soluble in 7 parts of cold water, and freely soluble in alcohol and hot water. Both salts must be free from barium.

Tannate of Quinia.—To a neutral solution of quinia salt add a solution of gallotannic acid, free from resinous matter, until the white precipitate is redissolved; neutralize exactly with solution of bicarbonate of sodium, whereby the quinia tannate will be precipitated; collect upon a filter, drain, dry, powder and wash with distilled water; then dry again. It is a white amorphous powder, 3·5 parts of which correspond with 1 part of quinia sulphate; if prepared from the latter salt, it always retains a certain quantity of sulphuric acid.

Lactate of sodium is made by neutralizing lactic acid with sodium bicarbonate, and evaporating; it is very deliquescent.

Sulphovinate of Sodium.—1,000 grams of sulphuric acid are carefully, and with constant agitation, added to 1,000 grams of strong alcohol, and set aside for several hours; the liquid is then diluted with four liters of distilled water, neutralized with barium carbonate, and filtered from the precipitated barium sulphate. The filtrate is decomposed by a solution of sodium carbonate, and the filtrate concentrated in a water bath and set aside to crystallize; if necessary, the crystals are purified by recrystallization from water, and when dry preserved in well stopped bottles. The yield is about 1,000 grams. The salt forms hexagonal tables, which are very soluble in alcohol and water, have a scarcely bitterish taste, and when heated to 120°C. (248°F.) liberate alcohol. Its aqueous solution is not precipitated by barium chloride or by potassium sulphate.

Syrup of Hypophosphite of Sodium.—Dissolve 5 grams of the salt in 445 grams of simple syrup, and add 50 grams of orange flower syrup. A tablespoonful weighing 20 grams contains 0·20 grams (3 grains) of sodium hypophosphite.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

The fixed oil of stavesacre is described by Balmanno Squire as colorless and inodorous; an ointment made from it was found equally efficacious in scabies as sulphur ointment, and by far less irritating.—*Phar. Jour. and Trans.*, June 23; *Brit. Med. Jour.*

Preservation of powdered Ergot.—Mourrut recommends to mix the freshly powdered ergot with 5 per cent of powdered benzoin, whereby it will preserve its physical and medicinal properties without alteration.—*Rép. de Phar.*, May 10; *Jour de thérap.*

Method for Gelatinizing Carbonbisulphide, Petroleum Benzin, etc.—Mercier has observed that fixed oils, more particularly the drying oils, when mixed with a small quantity of protochloride of sulphur, form a solid transparent mass, having nearly the elasticity of caoutchouc. If at the moment of mixing, a volatile liquid, soluble in the oil, be added, the solid mass will retain that liquid. Less than 10 per

cent. of the sulphur chloride should be used to obtain a glue-like non-pulverizable mass, which will retain 70 per cent. of carbonbisulphide; but by increasing the chloride the mass will assume the aspect of horn and be so friable as to be easily reduced to powder by rubbing between the fingers, while at the same time the largest portion of the volatile liquid is given off. Boiled linseed oil is best adapted for these purposes.—*Rép. de Phar.*, May 15, p. 294.

Glycerite of Phosphorus.—Chas. Ménière recommends to mix some sugar or gum arabic with sufficient glycerin to obtain a mixture of the consistence of honey; this is heated to 43°C. (110°F.), when 0·10 gram phosphorus is dropped in and finely divided with the aid of a pestle. Enough glycerin to make 1,000 grams is then added in small quantities, the heat of the water bath being kept at about 50° C. (122°F.); the turbid mixture gradually becomes clear, is then set aside for 24 hours, filtered and bottled.—*Ibid.*, June 25, p. 354.

Solubility of Sulphur in Acetic Acid.—Leo Liebermann has observed that concentrated or somewhat diluted acetic acid will dissolve appreciable quantities of sulphur, which are separated again as a milky precipitate on the addition of water, or in the form of long prisms if evaporated under an air pump.—*Ber. Chem. Ges.*, 1877, p. 866.

Products of the Distillation of Wood at a low Temperature.—On the dry distillation of wood at a temperature below 200°C. a product is obtained, which on rectification yields a heavy oil, but slightly soluble in water. H. B. Heill obtained a quantity of this oil from Dr. Squibb and found it to contain *furfurol*, a yellow body yielding pyroxanthin on being treated with caustic soda, some *pyromucic acid*, an *oil* having the odor of smoked fishes, and other products not yet examined, *Ibid.*, p. 937.

Aeterpen (see "Am. Jour. Phar.," 1876, p. 411), discovered by Meyer and Spitzer, has not the composition $C_{12}H_{20}$, as previously announced, but is $C_{10}H_{16}$.—*Ibid.*, p. 990 and 1034.

Liquor ferri acetici, Ph. Germ., is prepared by precipitating with ammonia 10 parts of solution of ferric sulphate, sp. gr. 1·318. The washing and expression of this precipitate is a very tedious operation; G. Mankiewicz therefore recommends to collect it upon a strainer and expose it to a temperature of 5°C. (23°F.) for about 24 hours, until it is completely frozen; it is then taken into a room and allowed to

thaw gradually at the ordinary temperature, and the water to run off. The ferric hydrate thus obtained is readily soluble in 6 parts of cold acetic acid, sp. gr. 10·40. The solution usually has a density of 1.150, and must be diluted with distilled water to obtain it of the required specific gravity, 1·134 to 1·138.—*Arch. der Phar.*, June, 1877, p. 510.

Administration of Castor Oil, Copaiba, etc.—Limousin proposes to use wafer capsules for the purpose. Two wafers are united, except on one portion of the rim, through which opening the liquid is introduced by means of a pipette; or the oil is placed upon one wafer, its viscosity preventing its spreading to the margin before the other wafer is rapidly affixed in the usual manner. The substance of the wafer is soon saturated by the oil, and is then less readily softened by water, while the finely divided oil is apt to turn rancid; wafer capsules filled with castor oil should therefore not be kept on hand, except for a short time. Codliver oil will communicate its odor to the capsule, and is, therefore, not adapted, unless the inner surface of the wafer be first covered with collodion, in which case it becomes less readily disintegrated.—*Rép. de Phar.*, May 10.

Canada Balsam as an Excipient for Pills.—To prevent pills from becoming too hard and insoluble, Dannecy proposes a mixture of one part of wax and three parts of Canada balsam, which has also the advantage of being well adapted for deliquescent substances, like potassium acetate, which are well preserved thereby for an indefinite period. —*L'Union phar.*, p. 168.

Preparation of Iodic Acid.—When this acid is prepared by passing chlorine into water containing suspended iodine, 20 parts of water to 1 of iodine must be taken, in order to transform all the iodine into acid; otherwise chloride of iodine is formed.—*Jour. Chem. Soc.*, March.

Boettger's test for sugar in urine has been modified by Professor Brücke as follows: The urine is slightly acidulated with muriatic acid, and an acidulated solution of bismuth-potassium iodide added, whereby all traces of sulphide are removed; the clear filtrate is then rendered alkaline by strong potassa solution and boiled for a few minutes, when the presence of sugar will be indicated by a gray or black coloration.—*Phar. Cent. Halle*, No. 24, from *Jahresber. phys. Ver. Frankf.*

Testing Beeswax for Resin.—E. Schmidt recommends a modification of Donath's method (1872), as follows: Five grams of the wax

are heated in a flask with 20 to 25 grams of crude nitric acid, sp. gr. 1·32, and boiled for one miuute. An equal volume of cold water is now added, and, with constant agitation, an excess of ammonia; the liquid is separated from the wax, and poured into a glass cylinder; it has a yellow color if the wax was pure, and a more or less intense red brown if resin was present. One per cent. of the latter may thus be readily detected, particularly if the resulting color is compared with that produced by pure wax. Nitric acid acts much more energetically upon resin than upon wax.—*Ber. Chem. Ges.*, 1877, p. 837.

Assay of Cacao and Chocolate.—E. Heintz concludes from his experiments that cacao dried at 25°C. (77°F.) should yield not over three or four per cent. ashes (Surinam cacao 1·8 per cent., Caracas 4 per cent.); if partly deprived of the fat, it still retains 27 to 37 per cent. of it, and should yield not over 4 to 5·5 per cent., pure chocolate not over 1·5 or 1·7 per cent. of ash. Cacao shells yield 8·5 to 18·5 per cent. of ash, and if used for adulterating cacao or chocolate, their ash will be increased in amount.

Twenty grams of the chocolate or cacao are exhausted with benzin and the solution evaporated; the residue is fat, the purity of which is ascertained by ether (or petroleum benzin—see May No., p. 238). The undissolved portion is six times treated with water of 15°C. (59°F.), and the moist residue examined by the microscope, by which foreign starches and the spiral vessels and dark-red cells of cacao shells are easily detected. The residue is washed with strong alcohol (the filtrate must not be deeply colored), dried and weighed. The weight deducted from 20 grams, less the weight of fat, indicates the sugar present, from which, however, 4 per cent. should be deducted, which is the average amount of cacao constituents which are soluble in water.—*Arch. d. Phar.*, June, 1877, p. 506–510.

Paullinia pinnata, Lin., is a tree indigenous to South America and the Antilles, and is known as *timbo.* The yellowish-gray bark of the root has an agreeable musk-like odor and is used in the form of poultice in some liver affections. Stanislas Martin has analyzed it, and found tannin, starch, resin, volatile oil and an alkaloid, *timbotina*, the sulphate of which crystallizes in white needles.—*Bull. gen. de Thèrap.*

The Alkaloids of Calabar Bean.—Harnack and Witkowsky have recently investigated this subject in the pharmacological laboratory

at Strassburg, and ascertained that calabar bean contains two alkaloids, one of which acts like strychnia, while the second, heretofore known as *physostigmia*, has a paralysing effect. The new alkaloid which they have named *calabarina*, is insoluble in ether, soluble in alcohol and more freely soluble in water than the former; its precipitate with mercuro-potassium iodide is insoluble in alcohol. The calabar preparations of commerce are often mixtures of the two alkaloids in varying proportions, hence their effect must vary considerably; an English preparation was found to be almost free from physostigmia, while Duquesnel's *eserin* appears not to contain any calabarina. Physostigmia has a tendency to change into Duquesnel's *rubreserin*, particularly under the influence of alkalies; the latter body, however, is insoluble in ether; an etherial extract seems, therefore, preferable to one made with alcohol. O. Hesse, however, denies this, since physostigmia in its natural combination is nearly insoluble in ether.

O. Hesse refers also to the difficulty of recognizing the purity of physostigmia, which is amorphous even if obtained by Vée's process (1865); what the latter regarded as crystallized eserina was most likely a body similar to cholesterin, still containing some alkaloid. Hesse has recently isolated this body and found it to crystallize from ether, chloroform and petroleum ether in white silky needles, which are indifferent, and fuse at about 133°C.—*Schweiz. Wochenschr.*, No. 22, from *Phar. Zeitung.*

Preparation of Caffeina.—P. Cazeneuve and O. Caillot macerate 1 part of cut black tea with 4 parts of boiling water until the leaves are soft; 1 part of slaked lime is then added and the mixture dried in a water bath. The residue is rubbed to a coarse powder, exhausted with chloroform, the solvent recovered by distillation, and the greenish residue treated with boiling water; the solution is passed through a moistened filter and the clear liquid evaporated and crystallized.—*Phar. Centralb.*, No. 23, from *Bull. Soc. Phar.*

Veratria.—E. Schmidt boiled 5 kilos coarsely powdered sabadilla seed with water containing 300 grams sulphuric acid, and repeated the operation with a somewhat smaller quantity; the large excess of acid prevents the liquid from becoming too mucilaginous. The filtrate was treated at the boiling temperature with an excess of ammonia, and the precipitate well washed with water, dried and treated with ether. The

etherial solution was evaporated, the residue dissolved in dilute hydrochloric acid, the solution filtered and while boiling, again precipitated by ammonia; by washing the precipitate with boiling water, again disdolving in acid and treating as before, it was obtained pure; the yield was 50 to 56 grams. It was obtained crystallized by Merck's method ("Am. Jour. Pharm.," 1856, p. 134), and its composition found to be $C_{32}H_{50}NO_9$, the analytical results as to C and H agreeing with those of Merck and Weigelin, and also with the nitrogen found by the latter. The formula was verified by the analysis of several salts and double salts.

The author coincides with Weigelin in assuming the existence of two modifications of veratria, one insoluble, the other soluble in cold water, but the latter is readily converted into the insoluble form by boiling, and partly also by ammonia. When separated by ammonia in the presence of some ammonium chloride and from a solution of a certain concentration, veratria is obtained as fine needles, which are strongly iridescent in the sunlight. The resinous mass obtained by Merck's method from making crystallized veratria is the same alkaloid, but amorphous, soluble in diluted alcohol, and after washing with cold water, insoluble in that liquid.

A number of commercial samples were examined by the author and found to be pure veratria, completely soluble in ether and except minute traces insoluble in boiling water; they were, therefore, free from sabadillia and sabatrina.—*Arch. de Phar.*, June, 1877, p. 511-532.

The Crystalloids and Colloids of Honey.—By subjecting filtered honey to dialysis in a parchment dialysator, E. Dietrich found that the surrounding water had acquired a pale yellowish color, and, on evaporation, yielded 50 per cent. of crystalloids in the form of a clear little-colored golden yellow honey, which did not crystallize from alcohol, but had such a fine taste and floral odor as the author had never before observed in honey. The colloids remaining in the dialysator contained slimy floccules, were destitute of honey-like odor and had an insipid sweetish taste. If the loss by colloids was not so great, the author would recommend the purification of honey by dialysis.—*Chem. Centralblatt*, No. 20, from *Ind.*, *Bl.*

Glycyrrhizin.—J. Habermann has recrystallized commercial glycyrrhizin, prepared by Trommsdorff, from glacial acetic acid, and ob-

tained it in hemispherical aggregations of microscopical needles, which are very easily soluble in water, also in strong but less in absolute alcohol, nearly insoluble in ether, and have an intensely sweet afterwards somewhat acrid taste. Alcoholic solutions of it are precipitated by calcium chloride and lead acetate. Boiled with very dilute sulphuric acid, a fawn-colored resinous precipitate was obtained, which had the characteristic sweet taste of glycyrrhizin. In this respect, and in the analysis, which differed to the amount of several per cent. of carbon, the author's results do not agree with those obtained by Gorup-Besanez in 1861.—*Chem. Central Blatt*, No. 18, from *Wiener Sitz. Ber.—Ber. Chem. Ges.*, 1877, p. 870.

Notes on the Saponin of Sarsaparilla.—In an interesting paper, published in "Archiv d. Phar.," June, 1877, p. 532–548, Prof. Flückiger reviews the chemical history of *parillin*, and recommends its preparation by exhausting the crushed root with warm alcohol, and distilling the tincture until the residue weighs one-sixth of the root. It is then gradually mixed with one-and-a-half times its weight of water, and after several days the liquid is decanted from the light-yellow precipitate, which is then mixed with about half its volume of alcohol, transferred to a filter and washed with alcohol of 20 or 30 per cent. Parillin is less soluble in weak than in strong alcohol or water. It dissolves very slightly in cold, but readily in hot water, without crystallizing on cooling; from boiling alcohol, sp. gr. 0·970, it crystallizes in needles. The yield was 0·18 and 0·19 per cent.

Concentrated sulphuric acid yields a yellow solution, which, on absorbing moisture, gradually turns cherry-red; warm diluted sulphuric acid colors parillin greenish, then red, and finally brown; phosphoric acid has a similar reaction, but the color is more green-yellow. The aqueous solution is precipitated by alcoholic solution of lead acetate, by lead subacetate and by tannin, and when warmed reduces alkaline copper tartrate, but does not react with other tests for sugar until after it has been boiled with a dilute acid, when the solution acquires a green fluorescence. This is best observed if a trace of parillin is dissolved in warm concentrated sulphuric acid, and disappears on dilution with water or on neutralizing with ammonia. The decomposition product, *parigenin*, is insoluble in water, the sugar appears to be partly crystallizable. Parillin is not sternutatory; its acrid taste is best observed in alcoholic solution.

The author compares the properties and analytical results of the above, and other similar bodies like saponin, senegin, cyclamin, digitonin, which are possibly homologous compounds.

VEGETABLE PARCHMENT AND ITS USES.

The history of invention bristles with illustrations of the statement that latent possibilities of eminent utility are hidden away beneath the most unpromising exteriors, demanding only the magic probe of the investigator to disclose themselves in quarters where they are least expected.

Who, for example, would have anticipated that a simple and almost instantaneous treatment with one of the most ordinary chemical agents was all that was required to altogether change the appearance and nature of unsized paper, and transform it from its normal state, in which it possesses but trifling tenacity, into a substance bearing the closest resemblance, both in appearance and characteristics, to parchment? Such is, nevertheless, the fact. By one of the simplest manipulations, the mere momentary immersion of the paper into strong sulphuric acid, and afterwards washing it thoroughly with water, this curious metamorphosis is brought about. This observation, made in England by W. E. Gaine, 1857, has originated[1] what is now a thriving industry—the manufacture of parchment paper (or vegetable parchment)—and the product has come to be almost indispensable for a great variety of general uses, as well as in technical and pharmaceutical chemistry, inasmuch as it affords an admirable substitute for the ordinary parchment and other animal membranes, while in point of cleanliness and cheapness it surpasses them. Plunged into water, it becomes soft and pliable. It is not injuriously affected by boiling water, regaining its original condition upon drying. It is quite impervious to water, alcoholic and ethereal fluids, benzol and numerous other substances, and consequently is largely used to replace the animal membrane in sealing vessels containing them. It was introduced with marked success during the late Franco-Prussian war as a substitute for animal bladder, in the preparation of the well-known pea sausage, which formed so note-

[1] In a report by De la Rue (1859) the honor of the scientific discovery in 1847 is given to J. A. Poumarede and L. Figuier, but the perfection of the process is W. E. Gaine's work.—EDITOR AM. JOUR. PHAR.

worthy a portion of the rations of the German soldiery. It has been recommended as a substitute for rubber for numerous purposes in hospitals, etc.

It has been found to perfectly answer the purpose of parchment in the process of separating mixtures of various substances by the method of analysis known as dialysis, a method devised by the English chemist Graham, for the separation of crystallizable from amorphous substances. This analytical method has come to be recognized as of the greatest importance. It was formerly a matter of the greatest difficulty to effect the perfect separation of many of the crystallizable substances of the vegetable kingdom (many of which are indispensable in medicine) from the gummy and other amorphous substances naturally associated with them, as the presence of the latter obstinately hinders the operation. It is only necessary now to bring the vegetable decoction upon a diaphragm of parchment paper, and to float the same upon a surface of distilled water, when the crystallizable materials present will find their way through the diaphragm into the water, while the amorphous ingredients are retained above, being unable to pass the membrane.

By this simple means the rapid and perfect separation of these two classes of substances is rendered possible, and the pharmaceutical chemist is provided with an apparatus of incalculable value. It is obvious, without entering into additional particulars, that the value of the dialytical method is not confined to the preparation of pure crystallizable substances of animal or vegetable nature, but that its utility extends in other directions. So, for example, it has been employed with great success in medico-legal examinations for the detection of cases of supposed poisoning, the dialyser affording a simple and rapid means of separating the crystallizable arsenic salts and the like from the mass of organic matter. It is only of late that the admirable qualities of parchment paper have begun to attract attention, and we may safely predict that its utility has by no means been yet exhausted.—*Polytech. Review*, No. 22.

JAPAN VEGETABLE WAX.

The most important article in Japan for illuminating purposes is the candle made of vegetable wax, which is mostly composed of palmitin. It is produced from the fruit of several trees belonging to the genus Rhus, amongst which the *Rhus succedanea* is the most important, and is

grown amongst vegetables, more or less extensively, almost everywhere in Japan, especially in the western provinces, from the south northwards to the thirty-fifth degree. The lacquerine (*R. vernicifera*) also yields wax, and differs in appearance but little from the wax tree; its geographical limit extends further northward, being at the thirty-eighth degree. Finally, the *Rhus sylvestris*, or wild wax, should be mentioned. The cultivated wax tree was originally imported from the Loo Choo Islands, but the growers of the tree now distinguish seven different varities. The tree grows in great abundance on the mountainous declivities of the province of Kinas, and in Higo, Hizen, Simabara, Chikugo and Chekugen. The fields are hedged in with it. The berries, which ripen in October and November, are of the size of a small pea and united in bunches, contain the wax between the kernel and the outer skin. When gathered they are exposed to the sun for a few days and then stored in straw. When they have attained their proper maturity, they are freed from stems by threshing with flails of bamboo. They are crushed, winnowed, steamed, placed in hemp cloth bags, steamed again, and afterwards pressed in a wooden wedge press, all by hand. In order to facilitate the flow of the wax, a small percentage of "Ye no abura" (oil from *Perilla ocimoides*, Lin.) is added. The raw product forms upon cooling a coarse, greenish, tallowy mass, which is placed in an earthen vessel with water and ashes. The yield is about fifteen per cent. of the berries used.[1] The wax is reduced to small scraps by means of a kind of planing tool, then washed and bleached by the sun and air, whereupon it assumes a pure white color. In ordinary candle-making the unbleached wax is used, and the manufacturing is done by repeated dipping and rolling on the flat of the hand, in order to smooth and harden the successive coatings. The wicks are made by rolling a narrow strip of Japanese paper in a spiral line around the upper part of a pointed stick, and twisting it at the upper end so as to prevent its getting loose. Two or three strings of the pith of *Juncus effusus* are then rolled around this paper in close spiral lines, and fastened with a few fibres of silk waste, so that the wicks can be taken off from the sticks and sold in bundles to the candle-maker. The latter places the wicks again on sticks, takes half a dozen of them in his right hand, dips the wicks into the melted wax, and rolls them upon

[1] Arch Phar., April, 1876, p. 374.

the palm of the left hand, repeating these operations till the candles have grown to the proper size. For the outside coating occasionally white wax is used. These candles are made of all dimensions; for ceremonies and similar occasions candles of bleached wax are employed of a fanciful shape and painted with bright colors. The art of candle-making is said to have been introduced from Loo Choo towards the end of the sixteenth century. Before this time pieces of resinous wood or paper dipped into oil was used.[1] The exports of Japan wax in 1874 from Hiogo and Osaka were 7,410 piculs; in 1875, 10,056. Prices ranged in 1875 between 11½ and 8½ dollars per picul. The consumption has greatly fallen off in London within the last few years, owing to previous high cost of the article, which induced buyers to substitute paraffin and other cheaper materials, and even the above low prices have not left a profit to shippers. The wax is now generally prepared in large square blocks or cakes of 133 lbs. in place of the old saucer-shaped cakes of from 4 to 4½ inches in diameter and one inch thick, by which a saving in freight is effected. The value of the wax shipped from Hiogo in 1875 was 93,277 dollars; from Osaka 955 piculs, valued at 8,986 dollars. The value of the total exports from Japan were 215,642 dollars in 1874, and 186,244 dollars in 1875. Of vegetable tallow there was exported from Kin Kiang in China in 1875, 2,747 piculs.[2] Of insect white wax 12,560 piculs, valued at £183,-525 were shipped from Hankow in 1875.—*Jour. of App. Sci*, April 2, 1877.

CHEMISTRY of the Barks of the OAK, WILLOW and ELM.

By E. Johansen.

The investigation was undertaken with the view of ascertaining the nature of the different tannin-like substances contained in the barks of the oak, willow and elm, and it was hoped, by isolating these and carefully examining their properties and the nature of their principal compounds, to ascertain whether they were analogous or even identical. By a long and elaborate process, the different tannins were separated from the three barks in something like a pure state.

Oak Tannin is a red-brown amorphous glistening body, easily solu-

[1]Catalogue of the Japanese Section, Philadelphia.

[2]Consular Reports.

ble in alcohol, slightly soluble in ether, and forms an imperfectly clear solution in water. In its behavior to litmus paper, metallic salts, and alkaloids, it is completely analogous to gallotannic acid. Dried at 110°C., it lost 8·48 per cent. of water. On analysis, it gives 54·61 per cent. of carbon, 5·32 per cent. of hydrogen, and 40·07 per cent. of oxygen, agreeing approximately with Wagner's formula, $C_{14}H_{16}O_8$, which requires 53·85 per cent. of carbon, and 5·13 per cent. of hydrogen. It contains also 0·77 per cent. of nitrogen and 0·13 per cent. of ash.

Willow Tannin consists of a brown-red amorphous body, with a slightly astringent taste; easily soluble in alcohol, slightly soluble in ether, and forming a thick solution with water. With ferric salts it gives a deep black color, turned violet-red by alkalis. It precipitates mercuric nitrate and chloride, and zinc and copper sulphates, as well as albumin, starch and alkaloids. At 120° the willow tannin lost 10·10 per cent. of water, and on analysis gave 51·13 per cent. of carbon, 4·78 per cent. of hydrogen, and 44·09 per cent. of oxygen. It contains also 1·88 per cent. of nitrogen and 1·63 per cent. of ash. Another specimen, prepared in a different manner, though possessing the same reactions as the last, contained 51·26 per cent. of carbon and 5·99 per cent. of hydrogen, besides having independently 0·44 per cent. of nitrogen and 1·42 per cent. of ash.

Elm Tannin.—In appearance and solubility this variety resembles oak tannin. With ferric chloride, it gives a dirty-green precipitate, turned violet-red by sodium hydrate. With ferrous sulphate, it gives a pure green precipitate. It precipitates lead and copper acetates, and zinc suplhate after some time. With zinc chloride, mercuric nitrate, calcium acetate, etc., it gave the usual reactions. At 110° elm tannin loses 3·32 per cent. of water, and, on analysis, gives 44·54 per cent. of carbon, 4·72 per cent. of hydrogen, and 50·74 per cent. of oxygen, besides containing 1·21 per cent. of ash.

The salts of these three tannin acids (quercitannic, salitannic and ulmotannic) were next examined.

Lead Salts.—Quercitannate of lead is a chocolate-brown, amorphous mass, slightly soluble in water, insoluble in alcohol or ether. On heating it to 110°, it lost 9·66 per cent. of water; and on analysis it gave 22·85 per cent. of carbon, 1·47 per cent. of hydrogen, 9·14 per cent. of oxygen and 66·54 per cent. of lead oxide. The salitannate of lead resembled the last body, and on drying at 120° lost 4·50 per

cent. of water, and on analysis gave 22·53 per cent. of carbon, 1·35 per cent. of hydrogen, and 53·28 per cent. of lead oxide. By fractionally precipitating with a lead salt, both these acids gave salts of varying constitution. Ulmotannate of lead was greyer than the last body; and on analysis gave 21·36 per cent. of carbon, 1·51 per cent. of hydrogen, 10·32 per cent. of oxygen, and 66·81 per cent. of lead oxide.

Copper Salts.—Quercitannate of copper is a brown substance, insoluble in alcohol and ether, and sparingly soluble in water. At 110° it lost 12·23 per cent. of moisture, and on analysis gave 39·99 per cent. of carbon, 2·38 per cent. of hydrogen, 28·14 per cent. of oxygen, and 29·49 per cent. of copper oxide. Salitannate of copper forms a dark reddish-brown salt, which lost at 120° 12·4 per cent. of moisture; and on analysis gave 39·36 per cent. of carbon, 2·35 per cent. of hydrogen, 27·83 per cent. of oxygen, and 30·46 per cent. of copper oxide. Ulmotannate of copper is chocolate-brown, and after drying at 110° gave 39·68 per cent. of carbon, 1·93 per cent. of hydrogen, 17·98 per cent. of oxygen, and 40·41 per cent. of copper oxide

Tin Salts.—Quercitannate of tin is a greenish-brown substance, insoluble in alcohol and ether, and only sparingly soluble in water. At 110° it loses 5·98 per cent. of moisture, and on analysis gave 36·32 per cent. of carbon, 2·56 per cent. of hydrogen, 20·69 per cent. of oxygen, and 40·43 per cent. of stannous oxide. The formula $C_{30}H_{26}O_{13}.3SnO$ agrees fairly with these numbers. Salitannate of tin is a chocolate-colored body, which losses 7·18 per cent. of moisture at 120°, and on analysis gives 35·17 per cent. of carbon, 2·79 per cent. of hydrogen, 15·05 per cent. of oxygen, and 46·50 per cent. of stannous oxide. Ulmotannate of tin on drying 110° gave 38·99 per cent. of carbon, 2·40 per cent. of hydrogen, 13·66 per cent. of oxygen, and 44·95 percent. of stannous oxide.

When these different tannins were acted on by dilute acids in the usual manner, as Grabowski has already shown, the oak tannin yields an easily decomposed saccharide and a crystalline body. The amount of these bodies obtained varies with the strength of acid employed. On purification the saccharide is obtained as a brown substance, forming a dark-brown bitter syrup. Similar bodies were obtained from the willow tannin. On analysis the saccharide obtained from the willow tannin, gave 36·94 per cent. of carbon, 5·19 per cent. of hydrogen, and 57·87 per cent. of oxygen. Elm tannin, on the contrary, yields no

crystalline body, but only a saccharide resembling in every respect the last.

On fusing with potassium hydrate, the oak tannin yields, amongst other products, butyric acid amongst the volatile products, and protocatechuic acid from the residue. Willow tannin, similarly treated, yielded acetic and butyric acid amongst the volatile products, whilst the residue in the retort contained a body whose identity could not be satisfactorily made out. Elm tannin, treated in the same manner, yielded acetic and butyric acids among the volatile products, and oxyphenic acid in the residue.—*Jour. Chem. Soc.*, June, 1877, from *Arch. Phar.* [3], ix, 210—248.

MICRO-CHEMISTRY as APPLIED to the IDENTIFICATION of TEA LEAVES, and a NEW METHOD for the ESTIMATION of THEINA.

By A. Wynter Blyth, F.C.S.

I have been lately examining tea leaves, with a view of obtaining some chemical test, either peculiar to them or, at all events, restricted to the thein-producing plants. The result of my experiments has been the establishment of a process of great simplicity which will enable any one in a few minutes to pronounce whether the merest fragment of a plant belongs to the thein class or not. The procedure is based upon the well-ascertained fact that the alkaloid already alluded to is distributed in the woody tissue, the bark, the stem, the leaf, the flower, in short, in all parts of a thein plant, and this is the more especially true in the case of the various species of *Thea*. Now, this thein has some very characteristic properties; the most useful of these for my present purpose are, that it commences to sublime at the comparatively low temperature of 101° C.; that it sublimes from organic substances in a perfectly pure crystalline state; that the crystals have a very definite, easily recognizable form, and that a one-thousandth of a milligram is distinctly seen aud may be identified by the aid of the microscope. The details of the process I use are as follows:

(1.) The leaf or fragment, if it is desired to examine it subsequently by the microscope, is boiled in a very small quantity of water, say a cubic centimeter, and the little decoction is transferred to a watch glass, a minute quantity of calcined magnesia added, and the whole evapo-

rated nearly to dryness on the water-bath; the extract is next transferred to the surface of a thin circular disc of microscopic covering-glass, on this again is placed a thickish ring of glass, which is covered with a second circular disc of thin glass, the whole forming what I will call "the subliming cell"—the subliming cell is placed on the surface of an iron plate, which carries a cup of mercury in which is inserted a thermometer, and the plate is fitted in the ordinary way to a retort stand. This method of sublimation, in all its essential features, is identical with the one proposed and employed years ago by Dr. Guy. On heating the iron plate, first, moisture is given off and condenses on the cover of the subliming cell, and this cover may be removed and replaced by a second. In a very short time after it has become dry, a light mist is seen on the upper disc, and this mist the microscope resolves into beautifully distinct little crystals of thein; they may be identified as thein by re-subliming, when it will be found they will rise to the upper disc at about the temperature of 101° C. The subliming temperature of the extract itself is rather variable; the extract should be heated, if no mist or crystals become visible, up to as high as 220° C., and if still no crystals are obtained, the substance most certainly contains no thein. In all my experiments I have always obtained a sublimate from genuine products derived from tea or coffee below 200° C.

(2.) The substance is boiled and treated with magnesia as before, the solution cooled, a bit of dialysing parchment folded and cut into a miniature filter form, and placed in a glass tube, which, as very small quantities are being dealt with, need be no bigger than a thimble, or a porcelain crucible may be used, which being always at hand will, perhaps, be more convenient than anything else. The solution is then, by this little dialysing apparatus, which I need not further detail, dialyzed for twelve hours; a yellow coloring matter and thein are found in the outer liquid; a microscopic examination of this liquid, when evaporated down will readily discover crystals of thein. As in the former case, the fragments of the leaf or the leaf itself is uninjured, and can be put to any supplementary examination desired.

(3.) The leaf is boiled for a minute or two in a watch glass, with a very little water, a portion of magnesia equal in bulk is added, and the whole heated to boiling, and thus rapidly evaporated down to a good-sized drop; this drop, containing yellow coloring matter, magnesia and

thein, is poured on to one of the thin discs of glass already mentioned, and then evaporated nearly to dryness on the subliming plate. When it approaches dryness the "subliming cell" is completed by the circle of glass and cover, and in this way a sublimate is readily obtained. If the substance is derived from a thein-producing plant, a distinct sublimate of thein will be the result. The leaves, etc., of the tea plant also yield, without any preparation whatever, scanty sublimates of thein, and coffee gives up a very large proportion of the alkaloid, below 110° C., but, at all events, in the case of tea it is most certain to operate with magnesia as described. I may here remark that if a small quantity, say a gram, of finely powdered tea be placed between two watch glasses, and heated in the water bath in the usual way, on removing the upper glass, at the end of an hour or so, all round but within the edge crystals of thein can be discovered by the microscope. It is, then, evident that in the ordinary way of taking the hygroscopic moisture of tea there is some loss of thein; but this is, I think, too small to be regarded in mere technical processes. I should also add that the addition of magnesia to a decoction of tea or coffee for the purpose of dialysis is not absolutely essential, since thein (somewhat scantily) dialyzes without the addition of any reagent. The main objection to the processes I have given is their extreme delicacy; any speck of a tea leaf which is easily visible to the naked eye will yield its infinitesimal group of crystals to the cover of the subliming cell; hence, in the examination of a foreign leaf, any fragment of genuine tea mechanically adhering to it may give rise to error. It must, however, be borne in mind that a great many leaves in the vegetable kingdom will yield, by appropriate treatment, michrochemical evidence as definite as that of tea, and the time may come when a large proportion of minute vegetable products will be identified, not alone by the shape of their stomata, their epidermal appendages, or the structure of their ultimate vesicles, but by isolating their acids, their glucosides, or their alkaloids, and evolving a microscopical *corpus delicti* from a milligram of crude material.

Quantitative Determination of Theina.—Struck with the ease and purity with which theina sublimed, it was but natural that I should attempt to work out a quantitative method of sublimation. I believe I have been successful, and, according to my own repeated experiments, the process I give here is both quick and accurate.

A quantity not less than one gram or more than two grams of either tea or coffee, in its undried state, is as finely powdered as possible, and treated in a flask with 70 cc. of water ; the flask is attached to a reversed Liebig's condenser, and the liquid boiled for one hour ; the decoction, including the powdered substance, is transferred to a porcelain dish ; about the same weight of calcined magnesia as the substance originally taken is added, and the whole evaporated down nearly to dryness ; the powdery extract is now transferred to the iron subliming plate already spoken of, and covered with a tared glass funnel, the edge of which must be accurately ground, and the tube of which must be several inches long. The substance should form a very thin equal layer within the circle of the funnel, which may be easily accomplished by a series of gentle taps. The heat at first should not exceed 110° C., then, when the substance appears thoroughly dry, it may be gradually raised to 200° C., and towards the latter stages to 220° C. If the heating has been properly regulated, there will be no distillation of empyreumatic products, but the alkaloid sublimes, in the cool part of the funnel, in a compact coating, cone-shaped, of beautifully white silky crystals. In order to ascertain when the sublimation is complete, the tared funnel may be cooled and weighed at intervals, or a series of tared funnels may be kept on hand and changed until no more thein is extracted. The funnel as well as the thein, as may be expected, at the end of the process is perfectly dry, and the increase of weight is thein pure and simple. By the method described I have made numerous determinations of thein, and have afterwards digested the powder remaining, for twenty-four hours in ether, but have failed to obtain any crystalline product ; I, therefore, believe that the whole of the alkaloid is sublimed, and that the results, with care, are accurate. From one to two grams may be considered by some too small a quantity for an accurate assay, and, if so, there is no reason why very much larger weights should not be used ; indeed, the process is well adapted for working on a large scale, and if there ever should be any great demand for the alkaloid would probably be employed.

There is yet another micro-chemical test which belongs to pyrology, and that is the presence of manganese in the ash of tea. The ash of a single leaf will give a distinct green manganate of soda bead, and, unfortunately for our purposes, so will the ash of a great many other leaves ; but since I have never found any tea leaf without manganese,

if it should happen that a leaf in tea would not respond to this test, I should consider it conclusive evidence of a foreign leaf.—*Jour. of App. Sci.*, July 2, 1877, from *The Analyst.*

MEMOIR ON THF PREPARATION AND COMPOSITION OF EMETINA.

By Jules Lefort and Frederic Würtz.[1]

Certain facts in the history of emetina recently published by M. Glénard do not tally with results which M. Lefort had previously obtained.

Imagining that this discordance was owing to the state of purity of the alkaloids, and hearing that M. Glénard intended to pursue the subject, it seemed to us that the time had come for the publication of a new process we had devised for the preparation of emetina in a state of absolute purity, and to finally establish its elementary composition. Judging *à priori*, from the known composition of the cinchonas and other vegetables, it is probable that emetina is not the only alkaloid contained in the ipecacuanhas. This seems to be also M. Glénard's idea; but although he has in a sense reserved this investigation for himself, we do not consider ourselves bound to neglect it uuder the unusually favorable circumstances in which we are placed by the courtesy of M. Dorvault, Director of the Pharmacie Centrale of France.,

Preparation of Emetina.—M. Glénard has discovered that by treating powdered ipecacuanha-root first with lime and then with sulphuric ether, all the emetina contained therein is obtained in a comparatively pure state. When New Granada ipecacuanha is used, which contains less of the brown resin than the Brazilian, the alkaloid is specially white. The object of M. Glénard's first researches was to suggest the idea that the alkaloid so obtained might be contaminated with one or more bodies resembling it in solubility and other properties.

To clear up this point, and to provide for the industrial production of ementia in case it should be introduced into medicine, we undertook some experiments, and finally adopted the following method for its preparation: 500 grams of alcoholic extract of ipecacuanha are dissolved in half a liter of water. Cold saturated solution of potassic

[1] Abstract from the "Journal de Pharmacie."

nitrate is added until a precipitate ceases to fall, and the mixture is set aside for 24 hours.

The abundant blackish-brown pitchy deposit consists of nitrate of emetina and coloring matter. The precipitate is purified by washing three or four times with a small quantity of water, and will be found to weigh about 200 grams. The precipitate is dissolved in a little hot alcohol, and thrown into a thick milk of lime containing 200 grams of calcic hydrate.

The mixture is evaporated to dryness on a water bath with constant stirring, the mass powdered and placed in a flask containing sulphuric ether. After some hours the ethereal solution has a clear yellow color, and contains all the emetina. The residue is washed once or twice with ether, the solution mixed, and the ether recovered by distillation. The residue in the retort is a yellowish-brown syrup. It is treated with water acidulated with sulphuric acid, and, on filtering, a solution of sulphate of emetina, free from resin, is obtained. Ammonia causes in it a voluminous yellowish-white deposit of emetina, which is washed and dried at a low temperature. It may be obtained still purer by dissolving it again in ether and evaporating in a vacuum. This process is decidedly the best yet published.

The idea that emetina is uncrystallizable has arisen from the fact that impure specimens have been operated on. The authors have prepared crystals of it varying in size from that of a millet-seed to a small lentil, and composed of minute needles, radiating from a common center.

Composition of Emetina.—The result of several analyses of a material dried in a vacuum give the following figures:

C_{28}	69·41
N	5·78
H_{20}	8·16
O_5	16·65
	100·00

M. Glénard's formula is $C_{30}NH_{22}O_4$, but his analyses were made on a specimen dried at a temperature of 110° to 120°C., at which temperature emetina changes rapidly.—*Chem. and Drug.*, July 14, 1877.

NOTES ON THE DISTRIBUTION OF THE ALKALOIDS IN CINCHONA TREES.

By David Howard, F.C.S.

In the "Pharmaceutical Journal" of June 26, 1875, I called attention to the constant presence of quinidia in renewed bark of *Cinchona succirubra* and *C. officinalis*, and in the root bark of *C. officinalis* in much greater quantities than in the natural stem bark. Since that time I have had many opportunities of confirming those observations, the renewed bark of both species invariably showing a greatly increased percentage of this alkaloid. I find, however, that by very careful testing of considerable quantities of the alkaloid from *C. succirubra* it is possible to obtain quinidia in quantities from a minute trace to ·06 per cent. of the bark in that from Ootacamund, Darjeeling and Java.

Recent importations of the root bark of *C. succirubra* and *C. officinalis*, from Darjeeling, and of *C. succirubra*, *C. Ledgeriana* and *C. Hasskarliana*, from Java, have given an opportunity to extend our knowledge of root bark. The specimens from Darjeeling are of special value, as the root, stem and branch bark sent over together may safely be taken as representing the produce of the same trees, whereas we have no information as to which of the various parcels of stem bark sent from Java the small quantities of root bark sent with them belong.

In examining the root bark from Darjeeling we are at once struck by the high percentage of alkaloids, which is in all cases much greater than that given by the stem bark of the same trees, usually in the proportion of about 8 to 5, and by the great difference in the proportion of the different alkaloids in the stem and the root.

In all the specimens that I have examined of the *C. succirubra*, the great increase is in the dextrogyrate alkaloids, quinidia and cinchonia, and to a small extent in the slightly dextrogyrate amorphous alkaloid. The percentage of quinia and cinchonidia in the bark averages slightly less in the root than in the stem, but more than in the branches; but the total variation in these alkaloids between the stem and root of the same tree is much less than between different samples of either from different plantations; the percentage of cinchonia, on the other hand, seems invariably in the root bark from twice to three times as great as that in the stem bark, and that of quinidia is increased from the minute quantity I have mentioned to ·2 to ·3 per cent.

The increase of the amorphous alkaloids is much smaller, being usually in the proportion of 11 to 10.

A comparison with the quill bark from the smaller branches shows even more decidedly this difference in the distribution of alkaloids. Not only do we find the total quantity of alkaloids much less than in the stem bark, but the proportion of the dextrogyrate alkaloids is distinctly less. One example will suffice to illustrate these remarks as well as the whole series, which all present similar variations; and I therefore add the percentage of alkaloids in the branch, stem, and root bark from one plantation, and the percentage composition of the alkaloid of each.

The composition of the alkaloid in the root fibre shows, as will be noticed, an even higher percentage of quinidia than that of the root bark. It is impossible to separate the bark from the wood in these small roots, which are from the thickness of a quill to a mere fibre, and therefore impossible also to give the percentage of alkaloids in the bark without the woody portion.

	Branch.	Stem.	Root.	Root Fibres.
Total alkaloids	3·3	5·5	7·6	2·0
Composed of:—Quinia	23·5	20·2	11·5	13·0
Quinidia	·6	·6	2 9	11·4
Cinchonidia	25·3	23·6	19·9	11·7
Cinchonia	19·4	32·8	47·3	46·7
Amorphous . . .	31·2	22·8	18·4	17·2

The crown bark from Darjeeling is interesting both in its resemblance to and difference from the red bark. This species has not flourished there; a large proportion of the trees died, and those that survived were stunted and weakly. The stem bark is of fair quality, though far inferior to that grown at Ootacamund, yielding 3 to 4 per cent. of alkaloid, of which 60 per cent. is quinia, with small quantities of quinidina and cinchonia. The root bark contains about twice as much total alkaloid, of which 50 per cent. is quinia, 9 per cent. quinidia, 9 per cent. cinchonidia, and 16 per cent. cinchonia; the increase in the quinidia and cinchonia being even more marked than in the case of the succiruba.

The root barks from Java which I have examined of the *Cinchona succirubra*, *C. Ledgeriania*, and *C. Hasskarliana*, all show the same tendency to the development of the dextrogyrate alkaloids. As has been mentioned, we are not informed what stem bark belongs to the root bark sent over; but it is interesting to observe that in each case the

root bark contains more of these alkaloids than any single specimen of stem bark of the same species, and greatly more than the average.

Thus, in the *C. Ledgeriana* the increase of alkaloid in the root is very slight, but the proportion of quinidia is doubled, and of cinchonia trebled, the amorphous alkaloid being also increased.

In the *Hasskarliana* the total alkaloid is decidedly increased, the proportionate increase of the dextrogyrate alkaloids being similar to that in the *Ledgeriana*. In both these species the quantity yielded of these alkaloids is but small, but the marked increase is not less interesting on that account. In the *C. succirubra*, also, the increased quantity of alkaloids in the root is chiefly cinchonia, the quinidia increasing from ·01 to ·05 per cent.

There has been no opportunity of comparing the root bark of the cinchonas from Ootacamund, for the great success which has attended the system of renewing the bark puts the destruction of the trees out of the question; but it is interesting to observe that the specimen of root bark from *C. officinalis* from this district, which I described in 1875, shows an increase in the dextrogyrate alkaloids equal to that in the *C. officinalis* from Darjeeling; there is also an increase in the quinia, but much less than in the Darjeeling bark.

A specimen of root and stem bark from the Wynaad district has reached me. In this case the total alkaloid is increased from 5·0 per cent. to 6·5 per cent., the quinia being diminished and the cinchonidia increased; but, as might be expected, the cinchonia is increased from 2·2 per cent. to 2·8 per cent., and the quinidia from a trace to ·3 per cent.

It seems, therefore, that there is an invariable tendency in the bark of the root of the various species of cinchona to produce the dextrogyrate alkaloids in greatly increased proportions, and this is the more noteworthy as the production of the lævogyrate alkaloids in the root bark varies exceedingly, according to the species and habitat, being sometimes greater and sometimes less than that in the stem bark of the same trees.

The same tendency is shown in a much slighter degree by a comparison of the bark of the branches with that of the large stems, the proportion of the cinchonia and quinidia increasing as we approach the root more rapidly than that of the quinia and cinchonidia; but it is not till we reach the root that we see the sudden and well-marked change in proportion of the alkaloids that we have been considering.

The constitution of the alkaloids of the renewed bark affords curious points, both of resemblance and contrast to that of the root. There is seen in the renewed bark also an increased yield of alkaloids, but in this case the increase of the more oxidized alkaloids, quinia and its isomers, is accompanied by a distinct diminution of cinchonia and cinchonidia.

This is most evident in the *C. succirubra*, the proportion of quinia and cinchonidia being inverted by the process, while the slight diminution of the cinchonia is accompanied by an increase of the quinidia from ·03 per cent. to ·14 per cent., but the same change takes place in the bark of the *C. officinalis*, where the cinchonidia almost disappears, and the quinidia is markedly increased in quantity, the amorphous alkaloids being in each species increased by the process.

The renewing of the bark has only been carried on as yet on the Neilgherries, but it is to be hoped that the great commercial success which has attended the experiment will lead to its adoption, if practicable, elsewhere, when we shall see if the modification of the alkaloid follows the same rule under all circumstances.

The variations shown by *C. succirubra*, under the influence of climate and soil, are also very interesting. This species of cinchona alone seems to be sufficiently hardy to adapt itself to varied circumstances, growing alike at Darjeeling where the other species have proved almost total failures, in the Neilgherries where the climate seems the best suited for the *C. officinalis*, and in Java in the habitat so singularly favorable to the *C. Ledgeriana*.

The proportion of the alkaloids varies, however, very distinctly under these varied circumstances. Except under the artificial treatment of renewing the bark, it is never rich in quinia, but the cinchonidia and cinchonia show very interesting variations.

In Java the cinchonidia predominates in a most marked degree. On the Neilgherries, though cinchonidia is still predominant, cinchonia shows an increase. On the Himalayas the bark shows a diminished yield of cinchonidia, but a marked increase of cinchonia and amorphous alkaloid.

Not having been able to get particulars of the various elevations at which bark is grown in Ceylon, I cannot speak with certainty as to the different specimens obtained from that island, but as far as I can judge,

the bark from the lower elevations approximates nearly to that from Darjeeling, while the higher plantations give bark of similar characteristics to that from Ootacamund.

All these considerations point out the great care that should be exercised to choose suitable situations for cinchona plantations, as well as the importance of selecting the best species for cultivation. The experience of the plantations in Java shows that under the most favorable circumstances the wrong tree will not produce rich bark, and that of the Darjeeling plantations shows that the right tree in the wrong situation will either dwindle away or produce a distinctly inferior bark.

The result of cinchona cultivation at Darjeeling thus agrees with the experience earned in some districts of South America, somewhat similarly situated in too damp a climate, at too low an elevation. There also, instead of the calisaya and micrantha barks, rich in quinia, of the higher slopes, we find what are either degenerate varieties or different species, in which cinchonia, and, in some cases, quinidia, take the place of quinia.

A vast proportion of the "flat yellow bark" now imported is from these regions, and though certainly flat and yellow resembles in little else the flat calisaya bark of a few years back, and must certainly lead to disappointment if substituted in medicine for the true calisaya.—*Pharm. Journ. and Trans.*, July 7, 1877.

NOTES ON THE PERMANENT EXHIBITION.

By the Editor.

II.

Cinnamon in its various varieties is quite prominent among the collection of spices. They are derived from different species of Cinnamomum, all of which are indigenous to India, southeastern Asia and the adjacent islands. The finest and most esteemed variety is the Ceylon cinnamon, which is obtained from *Cinnamomum zeylanicum* Blum, chiefly as cultivated along the southwest coast of Ceylon. It is collected from shoots about 2 years old, the bark being deprived of its external layer by scraping it down to an almost uninterrupted circle of hard and thickened cells, after which several layers of the remaining bast tissue are dried together, forming a rather solid compound quill. It is of a light yellowish-brown color, smooth upon the outer and inner surface, and upon the former with faintly glossy lines. Similarly prepared is the true cinnamon, which is cultivated in Java and other tropical countries; but none is fully equal in flavor to that from Ceylon, though in appearance

they are not unfrequently quite as handsome. We have seen a bark from Nova Goa which was well scraped and had a pale yellowish-brown color, resembling Ceylon cinnamon, but being considerably thicker, a single bark only forming the quill.

Chinese cinnamon, or cinnamon cassia, is usually referred to *Cinn. aromaticum*, Nees; but it is possible that several varieties or closely allied species may produce the commercial article which always comes in simple quills or curved pieces, the bark being thicker and of a deeper color than the preceding, and has fragments of the corky layer remaining upon the outer surface; its taste is rather less sweet. Under the name of *Saigon cinnamon* we find on exhibition a bark which has been met with in our commerce for several years; it is in thicker and in pretty regular simple quills, which are not deprived of the brown grey corky layer and have a very sweet and warm cinnamon taste. This variety yields a darker powder than the ordinary China cinnamon, but has a superior flavor. Closely resembling this variety was a cinnamon exhibited from Dilly, in the Portuguese Colony of Timor; it was marked as coming from *Laurus cinnamomum*, which is possibly correct, since not only the flavor, but also the microscopic structure place it nearer to the Ceylon than to the Chinese cinnamon. Somewhat similar, but coarser and with thicker cork, was a cinnamon from Principe, on the coast of Guinea.

The term *Cassia lignea* is sometimes used for designating the ordinary Chinese cinnamon, sometimes only for the inferior varieties of it, and occasionally it is restricted to a thicker bark of a deep cinnamon-brown color and with a thin corky layer, which has been by some writers referred to *Cinn. tamala*, Nees; it has but a slight cinnamon flavor and is more mucilaginous. Of a similar character was a bark exhibited from Sao Thomé on the coast of Guinea.

Culilawan Bark, from *Cinn. culilawan*, Nees, is usually in flat or slightly curved pieces, which are often $\frac{1}{4}$ inch thick, though usually thinner, covered with a brownish-grey cork, otherwise dark cinnamon-brown, of a mucilaginous aromatic taste. and an odor which is cinnamon-like, with an admixture of cloves and sassafras. Though indiginous to the Moluccas, it is cultivated in other tropical countries, and has been exhibited as a product of the Philippine Islands.

All the barks mentioned yield the well-known oil of cinnamon, which as obtained from the different sources, is in the main chemically identical, though there is a vast difference in the delicacy of the flavor. The oil of culilawan bark, however, has little of the odor of cinnamon, but reminds more of oil of clove and cajaput. More cinnamon-like but less agreeable in odor and taste are the so-called *cassia buds*, the unripe fruit of some species of cinnamon, which have some resemblance to cloves and consist of a thick perianth, the six small lobes of which are folded over the depressed ovary. Another product of the genus cinnamonum are the leaves formerly known as *Folia malabathri*, which are collected from Cinn. Tamala and probably from other species. The volatile oil which is obtained from cinnamon leaves has a distinct odor of cloves, and when heated also of cinnamon; it appears to contain cinnamic and eugenic acids (see January number, p. 12), and therefore to be similar to a mixture of the oils of cinnamon and cloves.

Much more clove-like and with a slight flavor of cinnamon is the South American clove bark, obtained from *Dicypellium caryophyllatum*, Nees; it occurs in long

compound quills of a chestnut-brown color, usually tinged with purple, and is used in Brazil like cinnamon.

Under the name of *sassafras*, both Venezuela and Brazil exhibited the bark of *Ocotea* (*Nectandra*) *cymbarum* which has a peculiar aromatic odor and warm camphoraceous taste, not in the least resembling the stem or root bark of our sassafras, either in appearance or flavor, but is doubtless valuable as a stimulant.

All the plants referred to above belong to the natural order *Lauraceæ* which is particularly rich in warm aromatic volatile oils; but a limited number of its species occur in temperate countries, the large majority being confined to tropical and subtropical regions, where many are employed either medicinally or for dietetic purposes.

VARIETIES.

The Peruvian Nitre-Beds.—On the Pacific coast of South America, extending from the fourth to the fortieth degree of south latitude, about 2,400 miles along the slope of the Andes to the sea, in Bolivia, Peru and part of Chili, there has been found a line of deposits of sodium nitrate, the "Peruvian nitre." The beds are of variable thickness, covered by one to ten yards' depth of earth and half-formed sandstone. The dry soil of the most of this rainless country is pervaded, in some degree, with this deposit. The mummied remains of the old Peruvian people are embalmed with it by the earth in which they were buried; and its crystals glisten on those ghastly relicts which were presented in the Peruvian department of the Centennial Exhibition, and those brought to this country by Dr. Steere. It has been estimated that in the province of Tarapaca, within fifty square leagues, the quantity of the nitre is not less than 63,000,000 tons. The appropriation of this vast resource has been taken up rather slowly, but has much increased for ten or twelve years past. Vessels laden with it go to the coasts of manufacturing countries. At Glasgow the works devoted to the production of ordinary saltpetre from the nitre of Peru extend over acres of ground. In 1868, 100,000,000 pound were used in Great Britain. As yet, it has been applied to the nourishment of crops only to a limited extent. But this seems to be its chief destination, and for this use it lies in the earth, a vast mine of wealth, for the disposal of coming generations. When multiplied population puts the sustaining power of the earth really to the test, this fund of sustenance on the Peruvian coast must come to outweigh in value the gold and silver mines of the Californian coast.—*Professor Albert B. Prescott, in Pop. Sci. Monthly for July.*

Potash and Soda in Organized Structures.—There remains to notice another representavive of the adequate resources, *potassium*. The statements made as to the supply of phosphorus, with some reservation, become true for potassium. Certain of the rocks contain a proportion of it, but from insolubility this is slowly

available, and is insufficient for the needs of higher organic life. The soils contain more, because the organic world has gleaned for the soil. Potassa and soda are two alkalies which replace each other in the laboratory at the convenience of the chemist, but, in the choosing of the living cell, one of these is always taken and the other left. We get potassa free from soda in the ash of a tree which grew in a soil having more soda than potassa. From sea-water, containing nearly 200 parts of soda to one of potassa, the sea-weeds furnish an ash having two to twenty times more potassa than soda. From the blood of man, having ten to fifteen times more soda than potassa, the muscles obtain a composition of six or seven times more potassa than soda.

This gleaning is good proof of the value of more, and the evidence is confirmed by the application of potassa as a fertilizer The stock of potassa—which is used somewhat in the arts—is derived mainly from the gatherings of the organic world. The ash-wagon takes up the savings of the hearth. In France the washings of sheep's wool are saved, and 160 pounds of good potassium carbonate are obtained from a ton of the wool. In the pioneer life of this country, the house-wives have burned corn-cobs and taken the ash for baking powder, eighty per cent. potassium carbonate, and preferable to the "dietetic salaratus" now used. Should the ash of the entire corn crops of the United States be taken without loss, it is estimated that over 100,000,000 pounds of potassium carbonate would be obtained. In the salt-beds at Stassfurt, Germany, there is a good proportion of potassa, and the use of this supply has been steadily increasing, both as material in manufactures and as a fertilizer.—A. B. Prescott. *Ibid.*

Lavœsium, a New Metal, named in honor of Lavoisier, has been discovered by M. Prat, in iron pyrites and other minerals. It is of a silvery white color, malleable and fusible. The solutions of its salts yield precipitates with ammonia, readily soluble in excess; rosecolored (like *roses du bengale*) with ferrocyanide of potassium; deep yellow-green with tannin; a brown coloration changing to a fawn-colored precipitate, with hydrosulphuric acid.—*Chem. News*, April 6.

Davyum, named in honor of Sir Humphrey Davy, is the name given to another new metal, the isolation of which has been announced by Sergius Kern. It has been found in platinum ore, and appears to occupy a place midway between molybdenum and ruthenium.—*Ibid.*, July 6.

Preparation of Pure Bismuth and Bismuth Compounds.—The usual impurities, even in what is sold as pure bismuth, are silver and iron. Quesneville's process, viz.: fusing the metal with nitre, has the disadvantage of being extremely wasteful, a large quantity of bismuth being oxidized. Nor can bismuth be separated from it by precipitation as oxychlorides with water, for iron is invariably a constituent of the precipitate. If the mixture be fused under a mixture of potassium chlo-

rate and a little sodium carbonate the iron is completely oxidised, while very little bismuth is lost; for the fused mass does not become alkaline as in the case where nitre is used as flux; 2 to 5 per cent. of sodium carbonate should be added, and the fusion should last for a quarter of an hour. No method of separating bismuth from iron by the wet method was successful, except by crystallizing the double chloride of bismuth and the alkalies, and by precipitating the bismuth from a slightly acid solution with oxalic acid. The bismuth oxylate, $Bi_2(C_2O_4)_3+15H_2O$ comes down absolutely free from iron. Too large an excess of oxalic acid should be avoided, for the oxalate is slightly soluble in the acid; the precipitate should not be allowed to stand too long in contact with water, else the basic oxalate is formed which retains the iron. The oxalate in ignition yields metallic bismuth.

This process has not been attempted quantitatively.

The only method of separating silver from bismuth is to oxidise the bismuth and leave metallic silver.

Bismuth is best precipitated as sulphide. The liquid is then warmed and the sulphide cakes together and may be easily filtered and washed. On ignition in air it is converted into bismuth oxide, and may be weighed as such.—Hans Thürach. *Jour. Chem. Soc.*, March, from *J. prakt. Chem.*

Aitificial Gold.—Take 100 parts (by weight) of pure copper, 14 parts zinc or tin, 6 parts magnesia, 3·6 parts sal-ammoniac, 1·8 parts quicklime, 9 parts cream of tartar. Melt the copper and add gradually the magnesia, sal-ammoniac, quicklime and cream of tartar, each by itself in the form of powder. Stir the whole for half an hour, add the zinc or tin in small pieces, and stir again till the whole is melted. Cover the crucible and keep the mixture in a molten condition for thirty-five minutes. Remove the dross and pour the metal into moulds. It has a fine grain, is malleable and does not easily tarnish.—*Jour. Frank. Ins.*, Aug., from *Phönix.*

Electro-chemical Deposition of Aluminium, Magnesium, Cadmium, Bismuth, Antimony and Palladium. By Arm. Bertrand.—*Aluminium* is deposited on a copper plate in granules from aluminium-ammonium chloride. The deposit may be polished. Chlorine is evolved at the positive pole.

Magnesium.—An adherent homogeneous deposit of magnesium may be obtained by electrolysing magnesium-ammonium chloride with a very powerful current.

Cadmium.—A spongy deposit of cadmium is obtained from its chloride, to which a few drops of sulphuric acid have been added. Cadmium-ammonium chloride gives a gray non adherent deposit, chlorine being evolved; a similar deposit was obtained from cadmium calcium chloride; cadmium bromide acidulated with weak sulphuric acid gives a coherent mass, susceptible of polish. If an iron wire be used as a negative, and a copper wire as positive electrode, the cadmium is deposited in long brilliant needles. A good result is also obtained with acidified cadmium-ammonium bromide. Cadmium-ammonium iodide yields a spongy mass. The sulphate gives a coherent deposit, capable of receiving a fine polish. A non-coherent deposit was obtained from the double sulphate of cadmium and ammonium.

Bismuth.—Ammonium chloride is the best solution from which to obtain an adherent deposit. The solution should contain 25 to 30 grams per liter, and should be cold. With a single Daniell's cell, the deposit takes place slowly and to a small extent; with a Bunsen's element it is quickly formed and very adherent. When polished, it has a shade intermediate between those of antimony and oxidized silver. It is not altered in dry air.

Antimony separates well from its double chloride with ammonium, at ordinary temperatures. The deposit is black, and may be advantageously used to replace platinum. When deposited from the chloride by a weak current on a fragment of antimony, the metallic layer has very curious explosive properties.

Palladium may be deposited from a perfectly neutral solution of palladium-ammonium chloride.—*Jour. Chem. Soc.*, Feb., from *Compt rend.*

New Test for Acids and Alkalis.—F. Frébault uses potassium and sodium picramates, which have a bright red color, and turn greenish-yellow when treated with the weakest acids. Filter-paper soaked in a solution of calcium picramate may be used for the same purpose, and may advantageously replace litmus.—*Ibid.*, Mar., from *J. Chim. Pharm.*

Method of Testing for Impurities in Potassium Iodide.—The novelty of Lepage's method consists in dissolving out all potassium iodide from the commercial sample with 80 per cent alcohol, and testing for the impurities,—carbonate, iodate, sulphate, chloride and bromide of potassium,—in the residue, by the ordinary processes.—*Ibid.* from *Ibid.*

Preparation of Iodic Acid.—When this acid is prepared by passing chlorine into water containing suspended iodine, twenty parts of water to 1 of iodine must be taken, in order to transform all the iodine into acid; otherwise chloride of iodine is formed.—G. Sodini. *Ibid.*, from *Gaz. Chem. ital.*

Precipitated Sulphur.—Instead of acting on polysulphide of calcium with pure hydrochloric acid, the commercial acid free from arsenic is used; the precipitate collected and washed is again mixed with acid, and left for about an hour, shaking from time to time; the grayish color then disappears suddenly; the acid is finally decanted, and used for a second operation.—M. Sansoni and C. Capellani. *Ibid.*, from *Ibid.*

Gelatin as a Reducing Agent.—On adding an excess of mercuric chloride to a solution of gelatin acidulated with hydrochloric acid, a flocculent precipitate is produced, which soon agglutinates and sinks to the bottom of the vessel as a dense layer. This swells up in pure water to a transparent jelly, which subsequently dis-

solves. On adding potassium hydrate to this solution and allowing it to stand, metallic mercury is precipitated in a finely divided state as a gray powder: the reduction is greatly facilitated by heating the liquid to 100°C. The solution of gelatin and mercuric chloride, when allowed to stand for a month or more, deposited mercurous chloride. On adding potassium hydrate to a solution of gelatin mixed with a little freshly precipitated mercuric oxide until the latter was dissolved, and then heating as before, metallic mercury was deposited in a finely divided state. The mercuric chloride can be completely separated from the gelatin by submitting a solution of the precipitate to dialysis.—G. Bizio. *Ibid.*, from *Ibid.*

Packing Paper.—Packing paper may be made water-tight by dissolving 1·82 pound of white soap in one quart of water, and dissolving in another quart 1·82 ounce (apothecaries' weight) of gum arabic, and 5·5 ounces of glue. The two solutions are to be mixed and warmed, the paper soaked in the mixture, and passed between rollers or hung up to dry.—*Jour. Frankl. Inst.*, Aug., from *Fortschr der Zeit.*

A New Washing Fluid.—Beat 1 kilogram of soap, with a little water, into a paste, warm it moderately, and incorporate it, by thorough stirring, into 45 liters of water at a temperature of about 30°C. (86°F.), to which 1 tablespoonful of oil of turpentine and 2 tablespoonfuls of ammonia have been added. The articles to be washed are to be soaked in this mixture for two hours, and then washed as usual. The fluid can be rewarmed and used a second time, by adding more turpentine and ammonia. The process is said to be time-, labor- and money saving, much less soap and rubbing being needed, and the wear of the clothes is greatly diminished — *Jour. Frankl. Inst.*, Aug., from *Neueste Erfind. u. Erfahr.*

Phosphate of Berberina.—Dr. T. L. A. Greve writes to the "Eclec. Med. Jour.," July, as follows: The alkaloid berberina may be prepared by the action of caustic baryta on the sulphate, or of oxide of silver on the muriate of berberina. The details of the necessary operations will be readily understood by any competent pharmacist. By saturating diluted phosphoric acid with this alkaloid, a solution of phosphate of berberina is obtained, which is, however, more readily made from the sulphate by boiling with water and precipitated phosphate of lime, when sulphate of lime and phosphate of berberina are formed. By filtering the solution of the latter, evaporating to dryness, redissolving in alcohol, filtering, and again evaporating, it may be freed from a small quantity of sulphate of lime. The above process may be varied by substituting phosphate of lead or phosphate of baryta for the lime salt. From the muriate of berberina the phosphate may be obtained by boiling in water with phosphate of silver, and redissolving in alcohol, as in the above process.

The Fluorescent Body in Atropa Belladonna.—This body, which is contained

in all parts of the plant, is distinguished by its strong fluorescence and stability, as shown by the following experiment: Two unripe berries were crushed with a little water, the mass dried on a water bath, the residue exhausted with alcohol, the solution again evaporated, and the remainder dissolved in water. The filtered solution was shaken at a gentle heat with animal charcoal, which takes up the compound. On then digesting it with alcohol and a little ammonia, a liquid is obtained showing a beautiful blue fluorescence, even if very dilute. The solution may be evaporated repeatedly without the compound losing in fluorescence, which reappears on the addition of ammonia.—R. Fassbender. *Jour. Chem. Soc.*, Feb., from *Deut. Chem. Ges. Ber.*

Eosin.—A. Baeyer has given certain additional particulars as to the manufacture of eosin. Fluorescein is obtained by heating 5 parts of anhydrous phthalic acid to 200° along with 7 parts of resorcin. The mass swells up and solidifies in the course of three to six hours. Fluorescein is extracted from this crude product by boiling with alcohol. It is a feeble acid, and dyes silk and wool a fast yellow with a reddish cast. For the preparation of eosin the fluorescein is suspended in 4 parts of glacial acetic acid and solution of bromine in glacial acetic acid, containing 20 per cent. of the former, is added. Tetrabrom-fluorescein (eosin) separates out in red crystals.—*Chem News*, July 13, 1877.

Origin of Petroleum.—Mr. H. Byasson has been led by the following experiment to give a scientific explanation of the formation of petroleum: If a mixture of vapor of water, carbonic acid and sulphuretted hydrogen be made to act upon iron heated to a white heat in an iron tube, a certain quantity of liquid carburets will be formed. This mixture of carburets is comparable to petroleum. The formation of petroleum can thus be naturally explained by the action of chemical forces. The water of the sea, penetrating into the cavity of the terrestrial crust, carries with it numerous materials, and especially marine limestone. If the subterranean cavity permits these new products to penetrate to a depth where the temperature is sufficiently high, in contact with metallic substances, such as iron or its sulphurets, we have a formation of carburets. These bodies will form part of the gases whose expansive force causes earthquakes, volcanic eruptions, etc. Petroleum is always found in the neighborhood of volcanic regions or along mountain chains. In general it will be modified in its properties by causes acting after its formation, such as partial distillation, etc. Petroleum deposits will always be accompanied by salt water or rock-salt. Often, and especially where the deposit is among hard and compact rocks, it will be accompanied by gas, such as hydrogen, sulphuretted hydrogen, carbonic acid, etc.—*Jour. App. Sci.*, March, from *Revue Ind.*

Fermentation of Glycerin.—Redtenbacher found that when a mixture of glycerin, water and yeast ferments, it yields acetic and propionic acids, and Berthelot obtained alcohol by fermenting a solution of glycerin with chalk and casein.

A. Fitz obtained quite different results by using a mixture of 2,000 water, 100 glycerin, 1 potassium phosphate, 0·5 magnesium sulphate, 2 German pepsin, and 20 chalk, to which was added a trace of a schizomyceta, which will be described in a future communication. At a temperature of 40° the liquid soon begins to ferment, carbon dioxide and hydrogen being given off, and the fermentation is finished in ten days. The solution then contains *normal butyl alcohol* and *normal butyric acid*, besides a little ethyl alcohol, and a higher acid, probably caproic. 100 parts of glycerin yielded 7·7 pure butyl alcohol and 12·3 anhydrous calcium butyrate.—*Jour. Chem. Soc.*, Feb., from *Deut. Chem. Ges. Ber.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Cumberland County, Me., Pharmaceutical Society.—At a meeting held July 27, Dr. H. T. Cummings read a lengthy and interesting paper on *dangerous cosmetics*, dwelling especially on the freckle lotions, which usually are strong solutions of corrosive sublimate or of lead salts; on the so-called hair restorers, which usually contain lead, and on the enamels, pearl powders and similar cosmetics consisting not unfrequently of bismuth compounds, lead carbonate and white precipitate. Regarding the trade in these articles the lecturer said:

Now in view of this fact that perfumers and cosmetic tinkers are liable to put death in the pot of cold cream or the jug of lotion, what is the duty of the pharmacist? There are but two alternatives that I can see, the one to refuse all agency in the sale of such compounds; and the other, if their patrons insist on having them, to let the purchaser take them on his or her own responsibility—but never by word or act to recommend them. It seems to me that those who scatter these deleterious preparations round so freely, and expose the public generally, and the fair sex especially, to such dangers, ought to be made amenable to the provisions of the law regulating the sale of poisons. Experience, as has been amply proved from what has already been said, has attested to the dangers incurred in the use of these poisonous preparations, and it is too late for most people to plead ignorance on this point; but if through cupidity they persist in being the agents of their distribution, after having been fully informed upon this matter, then they should be regarded as public enemies.

The new School of Pharmacy at Paris, which is now being erected in a part of the Luxembourg gardens, will occupy a space of 17,000 square meters, or somewhat more than four acres. In front of the building will be a grand court, 57 meters long, and ornamented with grass plots and with the statues of Parmentier and Vauquelin; at both ends will be two pavilions, containing the laboratories of the professors. The principal building will have a central vestibule, and contain the necessary offices, library and two lecture rooms, each of which will be 480 square meters, and accommodate 600 students. In the rear of the main building will be the gardens and green-houses, and a building 90 meters long and three stories high, intended to afford laboratory instruction to 600 pupils. The building will be erected over the catacombs, due precautions being taken to guard against accidents, and will probably be completed in 1880.

EDITORIAL DEPARTMENT.

Fraudulent, Proprietary and Semi-proprietary Medicines.—The traffic in the classes of medicines mentioned in the heading is among the greatest evils from which both the medical and pharmaceutical professions suffer. It is true that *frauds*, be they practised in the form of adulterations or actual substitutions, are usually short lived; yet even after they have been exposed, it is necessary to be constantly on the alert, because they are occasionally repeated by unprincipled dealers, and such repetition is again likely to succeed for a while, and the better the nearer the physical properties of the imitation approach those of the genuine article. In principle such frauds have no hold upon the community at large, nor upon the medical and pharmaceutical professions in particular; but in practice it is often different, and they are aided and abetted by those, who, in their morbid desire of purchasing *cheap*, overlook the *quality* as being of primary considerations; it is not want of honesty, but want of vigilance or of information, and in most cases, we think, the latter, which is to blame for the success of the fraudulent adulterator. There are many ill-informed apothecaries in large and small towns, and many medical practitioners, who, though being their own dispensers, cannot be expected to be the best judges of the quality of drugs, through whom the fraudulent medicines find their way to the consumer. An illustration of this state of things was furnished us by the frank confession of a man, who, some 20 or 25 years ago was a pedler, and who operated as follows: he purchased from one of our manufacturing chemists a quantity of sulphate of quinia in 1 oz. bottles and from another a corresponding quantity of salicin in bulk; the bottles were carefully opened, emptied and again filled with salicin, the quinia in bulk was sold in the city without difficulty, at a small loss, and the salicin in bottles was disposed of at the price of quinia to country physicians and storekeepers. The great fraud set on foot by a former drug firm of New York, a few years ago, will be fresh in the memory of our readers; we have it from persons who had the opportunity of obtaining the information, that the muriate of cinchonia, then sold as Pelletier's quinia, found its way almost altogether into the hands of country physicians and storekeepers, until the last of it was finally manufactured into sugar-coated quinine pills. which have undoubtedly been consumed as such by this time.

Proprietary Medicines, or secret preparations, properly so called, it is assumed are not prescribed by physicians; yet few pharmacists of experience will be found who cannot recall instances where such have been ordered in prescriptions. Inefficacy cannot be argued against many of these nostrums; the intelligent opposition against them is based upon the secrecy of their composition and the impossibility of devising general remedies for special cases, or for a number of diseases. The former stamps them with suspicion and as extortionate, the latter as hurtful, and consequently worse than worthless. In modern times they occupy the same position as did the arcana of former centuries, some of which, deprived of their cloak of se-

cresy, are even used at the present time. We do not apprehend that any of the nostrums of the present day will carry the names of their originators to an admiring posterity, not even the Warburg's tincture which has recently acquired so much notoriety, and which claims to have revived one of the fairest representatives of polypharmacy (see page 383) after a century's peaceful slumber; a resurrection requiring a firm faith, to be regarded as having produced more than the spectre of its former self.

Fraudulent medicines may be exposed and nostrums denounced as both should be; but a class of preparations has gradually gained a foothold which differ from those of the other two classes and yet frequently resemble the one or the other. We refer to what we regard as *semi-proprietary medicines*, which are often erroneously, in our opinion, called *specialties*. A physician may devote himself specially to diseases of the eye or ear, etc., and yet he has no secret, save the expertness which is the reward of his special devotion. It is, or rather it should be, similar in pharmacy. The manufacture of many medicinal chemicals, which formerly was one of the most important branches of pharmacy, has been transferred to the specialist, because the continued attention given to the complicated processes has necessarily made him a greater expert than the apothecary can hope to be by using such a process but once in a while; yet the processes are well-known by which the same results are obtainable. We can understand that one may have special facilities for the powdering of drugs, for preparing medicinal extracts, for the coating of pills, etc., and that such and similar articles be prepared as specialties by pharmacists or druggists with the view of supplying others. But with the manufacture of pseudo-chemicals and the host of so-called elegant preparations we at once enter upon dangerous ground.

It should never be left out of view that pharmacy is, and should be, no less a liberal profession than medicine, and that, from an ethical standpoint, a pharmacist has as little right to secrecy, or to take advantage of his observations, as the physician; the natural advantage given by greater expertness in any special direction cannot fail to be secured for him.

We are aware that the covetousness and indolence of many pharmacists have materially aided in bringing about the state of things under which medicine suffers no less than pharmacy; indolence, because they purchased galenics which they could have made themselves; covetousness, because in purchasing they have acted as though purchasing cheap was of greater importance than regard for quality. The physician has a right and it is his duty to insist upon getting every thing of prime quality and of the officinal standard; but we question his right of directing the pharmacist to purchase such articles which he can prepare himself, or to buy the products of certain manufacturers. In its beginning, the practice, though injudicious, was perhaps justifiable, but it has gradually extended so that it is no longer confined to officinal preparations, but embraces a large number of articles of which neither physicians nor pharmacists know anything save what the originators choose to tell them. Such information is usually given with an appearance of frankness, which on closer analysis is often found either to be so meagre as to scarcely differ from the assertions accompanying the ordinary nostrums, or so ambiguous and mis-

leading that it is difficult to draw the line of demarcation between them and the fraudulent substitutions and adulterations. It is for these reasons that we regard them as exerting a far more dangerous effect upon both medicine and pharmacy than the actual frauds or nostrums to which they are often so closely related. In prescribing them, physicians should remember that they have no definite knowledge of the composition of these articles, and that with very few exceptions, the information imparted by the labels or circulars as to the composition differs in no way from the vague statements which could be found on the wrappers of the sarsaparillas, buchus and other nostrums, which at some time or other enjoyed great popularity; yet which conscientious physician would have prescribed them?

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Exposition Internationale de Philadelphie, 1876. Rapport sur la Pharmacie par Achille Jonas, Pharmacien, Délégué du Gouvernement Belge à l'Exposition de Philadelphie. Brussels, 1877. 8vo, pp. 186.

The official report before us, which was rendered to the government of Belgium by Mr. A. Jonas, gives a pretty accurate and well-digested account of the pharmaceutical exhibits at the late International Exposition, as they appeared during the first two months. But after the departure of the author from Philadelphia several important collections of materia medica were to be found; notably was this the case with three Asiatic countries, China, Japan and the Philippine Islands, which the author had no occasion to see.

Die ältesten Heilmittel aus dem Orient. Von Professor Eduard Schaer. Schaffhausen, 1877. Pp. 24.

The ancient remedies from the orient.

This interesting and entertaining lecture was delivered at Zurich at the beginning of the scientific courses at the Swiss Polytechnicum, and gives interesting, chiefly historical, accounts of most of the important oriental drugs.

Quinquinas de Java. Par Mr. le professeur N. Gille, membre de l'académie royale de médicine. Anvers, 1877. Pp. 12.

The Cinchonas of Java.

We learn from this pamplet that, at the request of the Belgian authorities, the Dutch government very liberally supplied the Brussels school of veterinary medicine with a complete collection, representing the cinchona cultivation at Java; the report before us gives a brief account of the same, which Prof. Gille laid before the Royal Society of medical and natural sciences at Brussels. Those who have seen

the splendid cinchona exhibit of the Dutch Colonies at Fairmount Park, in 1876, can very well appreciate the scientific value of such a collection.

The Practitioner's Reference Book; adapted to the use of the Physician, the Pharmacist and the Student. By Richard J. Dunglison, M. D. Philadelphia: Lindsay & Blakiston, 1877. 8vo. 341. Price, cloth, $3.50.

After the Hippocratic oath, which is given as an introduction to the work, we find in the first division, headed "General Information for the Practitioner," a number of well arranged tables on weights and measures, solubilities of medicines, abbreviations in common use, and thermometric scales. When giving the number of drops in a fluidrachm, the author very properly calls attention to the uncertainty of thus measuring doses. We should have been still more pleased if he had gone a step farther, and advocated the discontinuance of the practice. The table of solubilities has been prepared with great care, and we have noticed few omissions or statements requiring particular corrections. Yellow and red oxide of mercury are practically insoluble in water; Wallace gives the solubility of the former as 1 in 200,000 parts of water, and Bineau that of both varieties as 1 in 20,000 parts. The mercuric iodide, reported as being insoluble, dissolves, according to Wurtz, in 150 parts, and the green iodide, according to Saladin, in 2,375 parts of water.

The other three divisions of the work are entitled: "Therapeutic and Practical Hints," "Dietetic Rules and Precepts" and "How to conduct a Post-mortem Examination." They are chiefly useful to the physician, but some portions of it are also of importance to pharmacists, particularly the very complete posological tables. The table of maximum doses, we think, will be very welcome to physicians and pharmacists; it is based on that of the German Pharmacopœia, and gives the maximum single and daily doses for adults of nearly all poisonous medicines commonly prescribed, both in apothecaries' and metric weights.

The list of incompatibles is very full, but as such tables necessarily must be, it cannot be expected to give information in all possible cases, and in some others the information given is vague; among the latter we class the sweeping statement that nitrate of silver is incompatible with salts of copper, while it is well known that the two metals may exist in solution together.

The work has been prepared with commendable judgment and care, and the publishers have spared nothing to present it in a durable and attractive style, which must enhance its practical usefulness.

The American Medical Association and the U. S. Pharmacopœia. Brooklyn, 1877. 8vo, pp. 157.

This is a reprint of the carious pamphlets which have appeared during the past year and to which we have referred on previous occasions; in addition thereto it contains the rejoinder to these papers, addressed by Dr. E. R. Squibb to the American Medical Association. It fairly represents the arguments advanced by both sides, and will be of value to those who feel interested in the subject, and who may obtain it free of cost by applying to Dr. Squibb. We may be permitted to state in

this connection that, after reading Dr. Squibb's rejoinder, we have failed to be convinced of the wisdom of his plan; on the other hand, we are, and have been for some years past, convinced of the necessity of a reform in the manner of revising the Pharmacopœia, and we believe that that can be successfully accomplished by the National Convention.

Annual Report of the Entomological Society of the Province of Ontario, for the year 1876. Printed by order of the Legislative Assemby. Toronto, 1877. 8vo, pp. 58.

The report contains, besides an account of the proceedings of the Society, various illustrated papers on blistering beetles, locusts, moths, beneficial and injurious insects.

Dose and Price Labels of the Principal Articles of the Materia Medica, and Preparations used in the United States. By C. L. Lochman. Allentown, Pa., 1877.

The labels are intended not to replace the ordinary shop labels, but in addition to such to be affixed to the bottles and drawers, and to serve as a ready reference in regard to doses and uses. Dangerous medicines are intended to be indicated by two heavy black lines and one or more exclamation marks (!). In this there are, however, some notable oversights: the poisonous nature of Tinct. opii deodorata, which is of the same strength as Tr. opii, is not marked; we should prefer to place chloral among the poisons; if dilute nitric and muriatic acids are poisonous, we should think that dilute sulphuric acid ought to be placed in the same class, etc.

Most of the labels, in which typographical errors occur, have been replaced by others, which are stitched in at the end of the book. The use which at present can be made of a label for *Rheum Russicum* is unknown to us.

The title-page states that a patent has been applied for; but we confess to our ignorance as to what there is *patentable* in the work, which is somewhat similar to the more complete label book published some years ago by Mr. George Barber, of Liverpool, with the addition of the black lines and exclamation marks, to indicate poisons, which we can hardly believe will be claimed as an invention.

Beiträge zur Chemie der wichtigeren Harze, Gummiharze und Balsame. Von Eduard Hirschsohn. St. Petersburg, 1877. 8vo, pp. 48.

Contributions to the chemistry of the more important resins, gum resins and balsams.

The experiments for these valuable "contributions" were made in Dragendorff's laboratory. We regret that we cannot make room for the entire dissertation, but expect to give a brief account of the reactions.

On the Physiology of Sugar in relation to the Blood. By F. W. Pavy, M.D., F.R.S. London, 1877. 8vo, pp. 15.

The pamphlet is a reprint from the "Medical Examiner" of two communications to the Royal Society, in the first of which the author describes his method

of accurately determining the amount of sugar by weighing the metallic copper obtained from the cuprous oxide by galvanic action. In the second paper sugar determinations of the blood of the dog, sheep and bullock are given, the mean of six or seven assays being ·787, ·521 and ·543 respectively per one thousand parts. The venous and arterial blood of the same animal was found nott o differ materially in the amount of sugar. After death the sugar disappeared spontaneously from the blood.

Milwaukee Souvenir. 1877. 8vo, pp. 76.

An illustrated pamphlet in the German language, giving a condensed history of the foundation and industrial and commercial importance of *the cream-colored city*, so called from the light color of the bricks used in building. Up to 1835 a single white family lived here; at present the population is estimated to exceed 120,000 inhabitants. During the two months commencing with June 5 last the conventions of not less than seven national and state associations were held here.

OBITUARY.

Professor August Husemann, Ph.D., died in Thusis, Switzerland, July 17, in the forty-fourth year of his age. At the age of fifteen he entered a pharmacy at Detmold as an apprentice, studied afterwards at Göttingen, and after having passed the state's examination, devoted himself to chemistry, and in 1860 received the degree of Ph.D. He investigated carotin and hydrocarotin, the ethers of sulphocarbonic and oxysulphocarbonic acids, the reactions of morphia and narcotina, and together with Marmé discovered lycina, cytisina and laburnina, also helleborin and helleborein, and proved the identity of lycina with betaina. Together with Th. Husemann, he published a work on toxicology and subsequently one on the proximate vegetable principles in their chemical, physiological, pharmacological and toxicological relations. Two supplementary volumes to Gmelin's Organic Chemistry were written in part by him; he was also actively engaged at Wigger's annual report on the progress of pharmacy since 1866 until Prof. Dragendorff became its editor in 1875. For a time he was private lecturer (privat docent) at the University of Göttingen, and afterwards accepted a call to the chair of chemistry and physics at the polytechnic school of Chur, where he remained until 1876, when failing health compelled him to resign his position.

George W. Aimar, of Charleston, S. C., died in that city in the fiftieth year of his age. He learned the apothecary business at Beaufort, S. C., and afterwards removed to Charleston, graduated at the Medical College of South Carolina, and entered into business on his own account in 1853. He took an active interest in raising the status of pharmacy in his native State.

THE AMERICAN
JOURNAL OF PHARMACY.

OCTOBER, 1877.

LABORATORY NOTES.

By Albert B. Prescott.

I. Solubility of Quinia Precipitate in Water-washing.

On precipitating quinia sulphate acidulate solution with sodium or with ammonium hydrate, and washing on the filter with water until the washings gave no cloudiness with solution of barium salt, Mr. W. J. Holloway found a loss of 11·6 per cent. of the quinia. The weight of quinia sulphate taken was 0·250 gram; two operations, one with each alkali, giving the same result. Two other operations were made, the precipitates respectively by sodium hydrate and by ammonium hydrate being set aside for 20 hours before filtering, and then each washed with 18·4 cc. of water. The precipitate by soda had wasted 2·9 per cent. of the alkaloid, that by ammonia 10·6 per cent. The filtrate from one of the precipitates by ammonia (added in very slight excess) was made turbid by adding soda, and the dilute washings of this same precipitate were made turbid by ammonia (though the first filtrate was not so affected). Apparently the solvent power of water upon the alkaloid was diminished by presence of a very small proportion of ammonia, though it is increased, as is well known, by presence of more ammonia. A change in the proportion of the same solvent reverses its effect, just as dilute sulphuric acid dissolves less lead sulphate than either water or concentrated sulphuric acid.

Mr. A. S. Lobb washed 0·280 gram of dried quinia on the filter with a half liter of water, dropped from a burette, at about 87°F., and found the alkaloid had lost 50 per cent. of its weight, each cc. of the water having dissolved 0·000216 gram of quinia. In all these cases the filtrates gave a precipitate with potassium mercuric iodide.

The solubility of quinia precipitate in sodium sulphate solution becomes of interest, because this solution is the filtrate, in the use of the best preci-

pitant, with the common salt of the alkaloid. From an experiment by Mr. Lobb it appears that solution of sodium sulphate has practically neither more nor less solvent power than pure water. A precipitate of 0·280 gram of the alkaloid was washed with 500 cc. of a half-saturated solution of sodium sulphate, dropped from a burette on the filter during 2½ hours, and then washed with pure water (214 cc.) until free from sulphate, when 0·1375 gram of alkaloid remained. Therefore, of the 714 cc. of sodium sulphate solution and pure water, averaged together, each cc. dissolved 0·0002 gram of alkaloid, a result practically the same as the 0·000216 gram dissolved by a cc. of pure water.

Of course, solubility in washing precipitates must fall below *solubility of saturation.* The latter is given for quinia, at 1667 parts of water of 68°F. (Sestini), in which proportion 1 cc. of water dissolves 0·0006 gram of the alkaloid, nearly. J. Regnault found 2024 parts of water at 15°C. to dissolve 1 part of pure quinia.

Evidently, the precipitation of quinia as a free alkaloid is inaccurate in quantitative work, under any circumstances, and, if there is much dissolved matter in the filtrate to be washed away, the operation gives no result of even approximate quantity. By measuring the filtrate with the washings, some notion of the loss may be gained, but this loss is varied by proportion of the precipitant, and may be varied by other dissolved bodies in the filtrate. Moreover, the precipitation of quinia by alkali, in the preparation of citrate of iron and quinia, is wasteful and inaccurate.

II. Gravimetric Determination of Quinia, as a Precipitate by Potassium Mercuric Iodide.

The value of this precipitate, washed and dried at 212°F., was found to be 2·900 grams for 1 gram of quinia, dried at the same temperature. This finding was the mean of three determinations, using Mayer's solution upon an acidulate sulphate solution of alkaloid, the results being respectively 0·801, 0·824 and 0·812 of precipitate from 0·280 of alkaloid. Just 26 cc. of Mayer's solution were required for the full precipitation of each portion ($26 \times 0·0108 = 0·2808$), after which 4 cc. of the standard solution were added in each portion, to represent an excess of the reagent, as convenient in a gravimetric operation. The quinia taken was Powers & Weightman's "pure quinia," which was found to lose 6⅔ per cent. at 212°F., so 0·300 gram was weighed in

each portion to represent the 0·280 gram as dried at 212°F. The volume of Mayer's solution required for each, as given above, very nearly coincides with 0·280 of Mayer's quinia. Farther investigation is desirable as to presence and proportion of combined water in the residue of quinia at 212°F. Mr. A. H. Allen[1] has reported the residue from ether solution to retain constant, at 212°F., 4·28 per cent. of combined water, a little less than that of a monohydrate. From this report Mr. A. N. Palmer[2] dissents, stating that a residue of constant weight can only be obtained at 260 to 270° F. See IV.

The precipitate by potassium mercuric iodide is very close, and bears water-washing without weighable loss. The reagent need not be of standard strength for gravimetric results; it can be prepared simply by treating solution of corrosive chloride of mercury with solution of iodide of potassium until the precipitate at first formed is just all dissolved. (For the execution of the determinations given in this note I am indebted to Messrs. J. J. Johnston and A. S. Lobb.)

III. Gravimetric Determination of Quinia as a Precipitate by Phosphomolybdate.

This precipitate is exceedingly close in the case of quinia, and bears washing without loss, but does not bear a temperature above 158°F. (70°C.) without reduction of molybdenum, shown by a blue color. The value of the precipitate, dried below 158°F. to a constant weight, was found by Mr. Lobb to be 3·665 grams for 1 gram of quinia as dried at 212°F. This result was the mean of two nearly identical determinations, 0·280 gram of the alkaloid giving respectively 1·026 and 1·0265 gram precipitate. The reagent, the acidulate solution of sodium phosphomolybdate, is added in slight excess, when the precipitate separates admirably.

IV. Solubility of Quinia Precipitate in Washed Ether.

This was found by Mr. Lobb to be 20 parts of the ether for 1 part of quinia (monohydrate), after 24 hours digestion in a stoppered jar. A portion of the saturated ether solution was drawn into a specific gravity bottle and its weight obtained, then poured, with the ether rinsing, into a thin glass evaporating dish (tared), the ether evaporated, the residue dried at 212°F. A constant weight was believed to be obtained,

[1] "Phar. Jour and Trans.," vi, 964, June 3, 1876. [2] *Ibid.*, vii, 89, July 29, 1876.

notwithstanding the difficulty of gain by hygroscopic water while weighing. The last four weighings were, for dish and contents, 26·895, 26·894, 26·893, 26·895. (See reference to Mr. Palmer in Note II.) The residue of quinia from ether solution is amorphous and does not yield a perfectly crystallizable sulphate. Taking this residue as a monohydrate, nearly 21 parts of the *washed ether* are required to dissolve a precipitate of quinia containing 1 part of anhydrous alkaloid.

The solubility of quinia in *ether* is given by van der Burg at 23 parts (ether of sp. gr. 0·72 and 18°C.), by Merck at 60 parts, Flückiger and Hanbury 21 parts, by Hesse—for quinia trihydrate—at about an equal weight of ether, by J. Regnault at 22·6 parts (15°C.)

V. Valuation of Six Samples of the Citrate of Iron and Quinia in the Trade.

The samples were obtained indiscriminately from different dispensing drug stores in Michigan. Only *the total alkaloid* was determined. This was done by extraction with chloroform, as follows: a weighed portion of the scales was dissolved in water in a wide tube with a stopper, a small amount of tartaric acid was added (to prevent precipitation of ferric hydrate, a hindrance to the separation of chloroform), solution of sodium hydrate was added to alkaline reaction, and the liquid repeatedly shaken with successive portions of chloroform, the chloroform being drawn off into a weighed beaker and evaporated until a portion of the chloroform caused less than one milligram increase of weight to the beaker. The total residue in the beaker was now dissolved in water acidulated with sulphuric acid, the solution treated with a slight excess of sodium hydrate solution, then extracted with successive portions of chloroform, as before, and the residue from this solution was dried at 212°F. to a constant weight. This residue is given as the alkaloid, containing, according to Allen, 4·28 per cent. water. The determinations were done by W. J. Holloway, in June, 1876, with the following results: The samples gave

5·2 12·2 8·7 9·0 11·4 8·3 per cent of alkaloid.

VI. The Presence of Sulphates in Citrate of Iron and Quinia.

In each of the six samples, numbered above, Mr. Holloway found sulphates present. In three of them the quantities of sulphuric anhydride were found to be less than 1 per cent. of the preparations; in the other three the quantities were found to be respectively 6·5, 3·5 and

1·8 per cent. of the preparations. A sample of citrate of iron and ammonium, from the same manufacturer who furnished the sample of quinia iron citrate which had the 6·5 per cent. of sulphuric anhydride (above given) was found to contain 4·9 per cent. of sulphuric anhydride. A few ounces of solution of tersulphate of iron were precipitated by ammonia water, and the precipitate washed "with water until the washings are nearly tasteless," as the Pharmacopœia directs in the preparation of solution of citrate of iron, from which the three scale iron citrates are made. In this washed ferric hydrate, sulphate was found present, amounting, as sulphuric anhydride, to 14·8 per cent. of the drained moist precipitate. A sample of citrate of iron and quinia was made by the pharmacopœial process, except that the quinia sulphate was added, as such, without precipitating the alkaloid, and the scales were found to contain 4·3 per cent. of sulphuric anhydride. By calculation (if I am correct) all the sulphuric anhydride of the quinia sulphate cannot form over 1·8 per cent. of the scales of quinia iron citrate. If 10 per cent. of water be assumed in the scales, their per cent. of sulphuric anhydride would be about 1·6. It will be remembered that the British Pharmacopœia, for preparation of the iron citrates, directs to "wash the precipitate (ferric hydrate) with distilled water until that which passes through the filter ceases to give a precipitate with chloride of barium." Such is the well-known adhesion of ferric hydrate for alkali salts, that to wholly remove them requires persistence and wash-water, in a sufficient quantity of each; but it is farcical to wash away the sulphate from the quinia, wasting from 2 to 11 per cent. of the alkaloid and making the preparation uncertain in strength within the same limits, while taking a greater quantity of sulphate in the hydrated oxide of iron. Of course, after the solution takes place, any quantity of combined sulphuric acid present, if derived from the iron precipitate, will be *just as much* in combination with the quinia as though it had been introduced in quinia salt.

VII. The Proportion of Quinia in the Citrate of Iron and Quinia of the U. S. P.

Our Pharmacopœia has no statement of the percentage of quinia in the scales, nor any quantitative test. By calculation from the materials, assuming that normal ferric citrate is formed, the preparation, if made strictly anhydrous, would contain 15·0 per cent. of absolute quinia,

equivalent to 17·5 per cent. of quinia trihydrate, no waste of quinia being considered. The *water* lost by citrate of iron and quinia on the steam-bath, in attaining a constant weight, was found by Mr. Holloway, for four samples, respectively at 9·2, 4·2, 8·1 and 6·8 per cent. A sample prepared according to the Pharmacopœia (not "soluble"), when recent, was found to lose 12·5 per cent. on the steam-bath. But whether any combined water is retained on the steam-bath or not, I do not know. The mean of the five samples above given is 8·4 per cent. loss on the steam-bath. The proportion of quinia by calculation from the materials, assuming 8 per cent. of water (with normal ferric citrate) would be 13·9 per cent. of anhydrous quinia, or 16·2 per cent. of quinia trihydrate. Two samples of quinia iron citrate, made by Mr. Holloway (without precipitating the alkaloid from its sulphate, and with addition of ammonia, as described in Note VIII), were found by him to contain respectively 14·9 and 14·2 per cent. of quinia, as dried at 212°F.

The British Pharmacopœia requires about 16 per cent. of quinia, the direction being to dissolve the scales in water, add "a slight excess of ammonia," the precipitate, "collected on a filter and dried," to weigh 8 grains for 50 of the scales. The British preparation takes 1 part of quinia sulphate to 3 parts of citric acid, the United States preparation takes 1 part of quinia sulphate to 3·6 parts of citric acid.

VIII. The Pharmacopœial Preparation of Citrate of Iron and Quinia.

The preparation strictly according to the United States Pharmacopœia not being a "soluble citrate," is not in use and not under discussion. Any scale citrate in favor must be a "soluble citrate," *i. e.*, an ammonio-citrate, and probably all or nearly all the citrate of iron and quinia manufactured is made on the basis of some sort of citrate of iron and ammonium, with addition of quinia (or quinia sulphate). In the United States citrate of iron and ammonium, *normal* ferric citrate solution is treated with enough ammonia to saturate 38 per cent. of the citric acid from which the ferric citrate was made. In the British citrate of iron and quinia, an *acid* solution of ferric citrate is treated with sufficient ammonia to neutralize 20 per cent. of the citric acid, and also with quinia enough to neutralize about 4 per cent. of the citric acid. The German "Chinium ferro-citricum" consists only of normal ferrous

citrate with quinia added thereto, making the double citrate slightly basic. (It contains 1 part quinia [hydrate] to 6 parts of the citric acid used, equal to 1 part quinia sulphate to about 5 parts citric acid.)

It was found by Mr. Holloway that a solution of citrate of iron and ammonium, *as basic* as the U. S. preparation of this name, does not perfectly dissolve quinia or quinia sulphate, at least to make permanently soluble scales. The U. S. citrate of iron and ammonium requires the addition of citric acid, with the quinia (approaching the proportions of the British preparation), to make from it a good quinia ferri-citrate. Mr. Holloway prepared two samples as follows: Normal ferric citrate solution (U. S. P.) was taken in two portions, each of 1 fluidounce, in each 48 grains of quinia sulphate were dissolved, and then 1½ fluidrachms of water of ammonia (half the proportion for U.S. citrate of iron and ammonium were added; then citric acid was added, to portion one 2 grains, to portion two 3 grains; both portions were scaled. Portion one gave the largest scales, which dissolved with tolerable readiness, but on diluting the solution there was some turbidity from separation of quinia (as occurred more decidedly in preparations made with more ammonia). The scales of portion two were very easily and quite permanently soluble. The product of portion one weighed 296 grains, of portion two 288 grains; portion one yielded 14·2 per cent. of quinia (steam-bath residue from chloroform solution), portion two 14·9 per cent.

If the quinia sulphate is to be precipitated (see Note VI), I would suggest that in dissolving it for this purpose citric acid solution be used instead of sulphuric acid, and that the precipitate be made, in a limited quantity of solution, by adding a slight excess of ammonia, and drained without washing. The citrate of iron solution, in any case, should be prepared free from sulphate, by washing the iron hydrate to chemical test.

IX. Examination of Sugars and Syrups.

The samples examined were sent by Mr. L. Rossiter, of Lake Forest (Chicago), Illinois. Mr. Rossiter is the writer of numerous letters, published in the "Chicago Tribune" in the summer and autumn of 1876, on the poisonous effects of sugars. He believes that a large proportion of the sugars of the market contain poisonous impurities, resulting from the use of chemicals in their manufacture, his

opinion being based upon the effects of the use of sugars as food, these effects being stated chiefly for persons of weak or deranged digestion. He surmises, from testimony and report as to sugar manufacture, that sugar of lead is much used in decoloring sugars, and that traces of the lead escape being removed. Beside the lead, he claims no information as to what the asserted injurious constituents are, but seems to assume that they are inorganic, from manufacturers' chemicals. There appears to be a general popular distrust of the *syrups* of grocers' trade, with an impression that some of them contain dangerous inorganic constituents, left behind from the use of chemicals in their manufacture.

Fourteen samples—ten sugars and four syrups, all selected by Mr. Rossiter, were subjected to an analysis embracing the following inquiries:

1. Special qualitative examination for *lead*, by a method of known degree of accuracy.

2. Special qualitative examination for *arsenic*, with a determination of the least quantity revealed by the process employed.

3. Quantitative determination of the total *ash*, and a full qualitative determination of its constituents, with particular care in looking for tin and zinc.

4. Determination of the *glucose* (lævulose and dextrose).

5. Determination of the *water* in obtaining a constant weight in an air-bath, at about 90°C. The sugars had been previously air-dried by standing in papers in a dry place.

6. Determination of the *specific gravity* of the syrups.

A quest was made for arsenic, because it might be left from the sulphuric acid of starch-sugar manufacture, from the sulphurous acid used to remove lead when lead acetate is employed in bleaching, and possibly from other chemicals or even from zinc or tin apparatus.

All the analyses were performed by Messrs. J. S. Johnson and S. E. Parkill.

1. The examination for *lead* was made simply by treating a solution of the sugar with hydrosulphuric acid gas; this test being more delicate than a test after removing the organic matter by any means. One hundred grams of the sugar or syrup were dissolved in a sufficient quantity of water and treated with the gas for several hours. In working with 10 grains of the solution, Wormley ("Michrochemistry of Poisons," p. 361) found that a solution containing one-250,000th of lead oxide gave a faint brownish tint; containing one-100,000th, a

distinct brownish tint, with resulting turbidity; one-50,000th, a distinct brownish precipitate. As our test was made with 100 grams of the sugar, it must be safe to put the limit of detection, for white sugars, at one part of lead oxide to 200,000 parts of solution (about 66,000 parts of sugar), a proportion giving one grain of metallic lead to about 10 lbs. of sugar. No lead was found in any of the samples.

2. The test for *arsenic* was made by Marsh's operation, with use of sodium-amalgam in alkaline solution of the sugar, the gas being received for some time upon paper charged with silver nitrate. A florence flask of about 500 cc. capacity was fitted with a cork admitting a tube of about one-half inch diameter. A solution of 100 grams of sugar, made slightly alkaline with potassa, was put in the flask and diluted to fill it up to the neck, sufficient sodium-amalgum was added, a disk of filtering paper of about an inch diameter and previously wetted with silver nitrate solution was placed over the tubule of the cork, in place, and the paper covered with a watch-glass. The flask was left undisturbed, with constant slow evolution of hydrogen, several hours. First, ordinary sugars (supposed to be free from poison) were subjected to the operation, and it was found that no reduction of silver or blackening of the paper occurred. Next, different proportions of a thousandth-normal solution of arsenious oxide were added to the sugar solution, in successive experiments, until it was found that one-fifth cc. of the arsenic solution was the least quantity that would cause a distinct and unmistakable blackening of the silver paper. Each cc. of the arsenic solution contained 0·000198 gram of arsenious oxide, or 0·00015 gram of arsenic (as an element). The one-fifth cc. contained 0·00003 gram of arsenic, and this quantity amounts to 0·00003 per cent. of the 100 grams of sugar taken. This percentage gives one grain of arsenic in 476 lbs. of sugar, a *limit of identification* which must be beyond the limit reached through a destruction of the organic matter. Finally, all the samples were tested as above described, and no arsenic was found in any of them. (It should be remarked that, had blackening occurred, it alone would not have been conclusive evidence of the presence of arsenic.)

3. The *ash*, by ordinary systematic qualitative analysis, revealed no other constituents than sodium, potassium, calcium, magnesium, aluminium and iron compounds, and sulphates, chlorides, carbonates and silica. No zinc or tin was found. The ash of Syrup No. 1 consisted

of calcium sulphate, aluminium and iron oxides, and sodium and potassium chlorides. Syrups No. 3 and 4 contained magnesium carbonate.

		Glucose.	Ash.	Water.	Sp. Grav.
Sugars—No.	1	. . .	0·001 per cent.	1·4 per cent.	. . .
	2	2·5 per cent.	0·363	1·9	. . .
	3	5·0	0·140	0·9	. . .
	4	. . .	0·015	0·1	. . .
	5	6·7	0·670	1·4	. . .
	6	. . .	0·039	0·2	. . .
	7	1·0	0·028	0·3	. . .
	8	1·4	0·111	1·6	. . .
	9	0·3	0·010	0·1	. . .
	10	trace.	0·144	0·1	. . .
Syrups—No.	1	31·3	3·295	20·0	1·405
	2	42·1	0·876	18·0	1·418
	3	33·6	2·700	21·0	1·403
	4	22·7	2·900	25·0	1.392

X. Investigations relating to Husemann's Test for Morphia.

When morphia or one of its salts is exposed to the action of concentrated sulphuric acid for twelve to fifteen hours at the ordinary temperature, or for half an hour at 100°C., or for a very short time at 150°C., there occurs (after cooling) a faint violet-red color. If, now (in the cooled solution), there be added a drop of nitric acid, or chlorine water, or ferric chloride solution, or solution of chlorinated soda or chlorinated lime, or a fragment of potassium nitrate or potassium chlorate, there is produced a beautiful blue to violet-red color, soon passing into a dark red. The one-hundredth of a milligram of morphia enables this color to appear with distinctness.—*Husemann's Pflanzenstoffe* (1871), p. 124. Husemann: *Zeitschrift analyt. Chemie*, iii (1864), 149; *Annal. der Chem. und Pharm*, cxxviii, 305. Modification of the test of Erdmann: *Zeitschr. analyt. Chemie*, i, p 224; *Annal. der Chem. und Pharm.*, cxx., p. 188. Erdmann's reagent is concentrated sulphuric acid with about 0·005 per cent. of absolute nitric acid.

The effect of pure sulphuric acid upon pure morphia was first investigated.[1] Most of the "chemically pure" sulphuric acid shows a trace of nitric acid in "the brown ring test," using a crystal of ferrous sulphate and giving several hours' time to the test. *The purification of sulphuric acid* from traces of nitric acid was tried in three ways: 1. About two fluidounces of the acid were heated in an evaporating dish on the sand-bath until the acid itself began to vaporize, when about a grain of ammonium sulphate was added several times, and then the heat continued until the bulk of the acid was reduced to a little less than half

[1] For considerations suggesting this inquiry see "Am. Jour. Phar," xlviii (1876), 62.

of that taken. 2. The same operation was made, substituting crystallized oxalic acid for the ammonium sulphate used before. 3. The sulphuric acid was simply evaporated to one-fourth its bulk without any addition. Each of the three purified samples gave negative results in all "tests for nitric acid." The purification with use of oxalic acid was repeated several times without getting a perfectly colorless product, but the slight brown tint, due to remaining carbon, was scarcely perceptible when a few drops were placed on porcelain. I think the purification with ammonium sulphate is more satisfactory, and sufficiently sure. In all the tests of morphia parallel operations were made with separate use of each of the samples of purified sulphuric acid, and the results were alike for the three. *The purification of the morphia* used in the tests was done by washing a good sample of "morphia, pure," in very fine powder, on the filter: first with chloroform and then with ether, each in repeated portions, and drying.

On treating the purified morphia with the purified sulphuric acid at 100°C. for half an hour, a pink-red color was in each case obtained. The least quantity of morphia giving the reaction distinctly was found to be one-fifteenth of a milligram (0.000064 gram or one-thousandth of a grain).

In each case, after treatment with the sulphuric acid at 100°C. for half an hour, and cooling, the addition of a drop of nitric acid gave a beautiful blue to violet-red color, soon changing to an orange and dark-red color, from which the orange faded out. This test (Husemann's) is certainly more distinctive than the test by hot sulphuric acid alone, but its delicacy is only a little greater. In this investigation the color was not obtained in quite as small quantities as those reported by Husemann, but the reaction appeared distinctly in each trial with one-eighteenth of a milligram (0·000054 gram or one-twelvehundredth of a grain) of the morphia.

Narcotina, with hot concentrated sulphuric acid alone, gave the same reactions that morphia does. In Husemann's test, the color given by narcotina was bright pink-red or carmine, the limit being found at about one-fifteenth milligram of the alkaloid. *Codeina*, treated with pure sulphuric acid at 100°C., gave a blue-purple color. The addition of a drop of nitric acid (after cooling) caused a little change, the color being blue to violet-red (coinciding with that of morphia). *Narceina*

was found to give very little color, either with sulphuric acid at 100°C. or with Husemann's test.

It is perhaps worthy of mention that *brucia*, with concentrated sulphuric acid, even in the cold, gives a light red color. This fact (stated in the books) must be borne in mind in testing for nitric acid by brucia. The color was obtained alike with each sample of purified sulphuric acid used in this work with Husemann's test, the tests being made to settle a doubt whether the reaction given for sulphuric acid with brucia could be due at all to any trace of nitric acid. The color of brucia with sulphuric acid, on warming and treating with stannous chloride solution, undergoes no other change than a gradual fading toward the yellow, but in presence of nitric acid (as is well known) the stannous chloride developes an intense purple.

I am indebted to Mr. H. S. Wyman for performing most of the operations stated in this note.

XI. Microscopic Examination of Ground Coffee and Coffee Extract.

The samples were gathered indiscriminately from the grocer trade of New York City and Ann Arbor, Mich., and subjected to microscopical and chemical examination by Miss M. E. Johnson.

Ground Coffe contained—
- No. 1, coffee, chicory, wheat.
- 2, coffee, chicory.
- 3, coffee, chicory, wheat, beans.
- 4, coffee, chicory.
- 5, coffee, chicory, wheat, beans
- 6, coffee, chicory.

Coffee Essence contained—
- No. 1, licorice root, wheat, beans.
- 2, chicory.
- 3, coffee, chicory.
- 4, chicoiy, burnt sugar.
- 5, coffee, chicory.

The manufacture of coffee extract suggests the question whether it may be made from unground coffee, with sale of the partly exhausted coffee berry. The exhaustion of unground cinnamon bark is well known, unbroken cinchona bark has been reported deprived of quinia and charged with chinoidin instead, and analysts are alert for finding spent tea. Hager states that roasted coffee contains at the most 20 per cent. of soluble matter ("Untersuchungen," II, 613). Wanklyn quotes Vogel's report of 39 per cent. of soluble solids in roasted coffee, with the remark that it appears rather high. Hassal reports finding the extract of six samples, with an average of 28 per cent. and ranging from 23 to 30. In a single instance, that of a coffee purchased as

Java in the roasted berry, and found not capable of making a satisfactory "cup of coffee," Miss Johnson determined the soluble matter, with several hours boiling, to be 17 per cent. Fictitious berries could not have been present, as a microscopic examination was made. In making coffee as a beverage, not over 10 or 12 per cent. of solids are usually dissolved. It is desirable that the average proportion of soluble matter should be better established, as a standard for analysis.

XII. An Examination of Proprietary Remedies for Asthma and Catarrh.

1. *Kidder's Asthmatic and Fumigating Pastiles.*—In bars, two inches long and one-fourth inch in diameter. To be ignited in a tin receiver and the fumes inhaled. A package of twelve pastiles is put at the retail price of 50 cents. Found to contain: belladonna extract (possibly stramonium or hyoscyamus), potassium nitrate, charcoal (in large proportion), gums, starch, undetermined matters and aromatics. Atropia (daturia or hyoscyamia) was identified by all the general and special chemical tests and by the physiological test. The "extractive" corresponded in behavior and proportion to that of belladonna extract.

2. *Dr. Perrin's Fumigator.*—A moderately fine brown, aromatic powder, with white and black coarse particles. It contains potassium nitrate, pine sawdust and aromatics. The pine sawdust was clearly identified under the microscope.

3. *Carbolate of Iodine Inhalant.*—A liquid having the color of impure carbolic acid and the mingled odors of phenol, camphor and wintergreen. It corrodes cork, but has a neutral reaction. A bottle containing one half fluidounce is put at 50 cents, retail. No other constituents were found except the following: Carbolic acid, camphor (of each about equal parts), and wintergreen oil. The examination for iodine was made, with negative results, as follows: 1. Tests for free iodine; 2. Tests after treatment with various proportions of chlorine, and, again, with various proportions of sodium sulphite, tests after fusing with potassa, the fused mass being dissolved, acidulated and treated with chlorine; 3. tests of the solution from the fused mass by silver nitrate solution. Iodophenol was made and found to respond to the tests above indicated.

4. *Dr. Marshall's Catarrh Snuff.*—A dark-colored uniform powder, with an odor of oil of cedar and a taste of tobacco with aromatics.

An ounce package is retailed at half a dollar. There was found in it tobacco (in a large proportion), asarabacca (?) and oil of cedar. (It may contain other essential oils.) The evidence of asarabacca (Asarum europæum) was wholly by the microscope—in comparison with that drug—and was not conclusive. Starch grains were present, as they are in asarabacca.

5. *Sage's Catarrh Remedy.*—A uniform green powder, with the odor of camphor, faintly modified by that of carbolic acid, and a taste saline and biting and camphorous. A half ounce bottle is sold at half a dollar at retail. An analysis of this nostrum was reported by Mr. Bowens ("Am. Jour. Phar.," xlvi, 265, June, 1874). In this report the proportions of constituents are stated. In our examination, by methods mostly different from those given by Mr. Bowens, the same constituents were identified, with one exception,—Prussian blue was found instead of indigo. Camphor, carbolic acid, hydrastis canadensis, ferrocyanide of iron and chloride of sodium. The golden seal was identified by separation of berberina and hydrastia, and obtaining the tests for each.

The examinations reported in this note were made by Mr. W. Howard Gates, under my observation, and we are both responsible for them.

XIII. "Butter Powders."

Articles sold with a declaration that they make two pounds of butter where but one pound was before. The articles are very simple things to examine, but the declaration (which is evidently the chief consideration sold) is much more difficult to manage. The first article of this species which came to my hand was "Star Butter Powder," and was to be used as follows: To one quart of milk twelve hours old add one pound of butter, warm, add one teaspoonful of the "powder," and churn, when there will be two and a half pounds of delicious fresh butter. The "powder" was made of equal parts of alum and sugar. Lately, the favor of another article came along; I have mislaid its name and directions, but it was some person's "butter powder," and was to be churned with the cream and an addition of milk, when there would be as much again butter as could be obtained without the "powder." This was found to consist of alum and sodium chloride. Now, as to the above-mentioned declaration (to which "butter pow-

ders" are attached, and for which people pay money), a hypothesis might be submitted. The idea is that milk has an important constituent, the most of which is not usually obtained in butter at all, and the aluminium compound in the powder changes this constituent of the milk into an "insoluble modification," and adds it (or multiplies it, with water) into the butter.

XIV. A Nostrum sold as Chinese Medicine.

This was the chief article sold by a "doctor learned in all the wisdom of China," traveling with a wagon and four horses, several vocal and instrumental musicians, a lecturer, and other devices for gaining attention. It was sold at one dollar a bottle, and was found to be made up pretty nearly as follows:

Compound spirit of lavender,	4 fluidrachms.
Spirit of camphor,	5 "
Water of ammonia,	5 "
Oil of sassafras,	½ "
Alcohol,	1½ fluidounces.
Water, to make 4 fluidounces.	

The mixture resembles "Hamlin's Wizard Oil," reported by Mr. Pierron ("Am. Jour. Phar.," Feb., 1877, p. 82), and likewise sold from a wagon drawn by four horses.

University of Michigan, *School of Pharmacy,* Aug. 14, 1877.

NITRO-BENZOLE IN ALCOHOLIC BEVERAGES.

By Henry G. Debrunner, Chemist.

Among the numerous adulterations to which alcoholic liquors are subjected, coal tar products have until lately been excluded. When it was rumored that the beautiful red color of certain French wines was due to anilin dyes, chemical analysis proved this suspicion to be correct, and large quantities of these wines, thus adulterated, were condemned.

I lately happened to get a sample of a so-called genuine "French brandy" for analysis. It formed a colorless clear liquid, with a remarkably strong smell of oil of bitter almonds. Although termed "brandy," it was said to be made of cherries, and therefore something similar to what is termed "Kirschwasser" in Germany, which really is the product of alcoholic fermentation of mashed cherries. The latter liquor

slightly possesses the above-mentioned smell, but by no means to such an extent as the sample I had for analysis, on which this quality was considered an important proof of its being the genuine article.

As to the origin of this smell, it must be remembered that the kernels of cherries contain amygdalin, $C_{20}H_{27}NO_{11}$, which, through fermentation caused by the nitrogenous emulsin, splits up into sugar, $C_6H_{12}O_6$; hydride of benzole or oil of bitter almonds, C_7H_6O, and hydrocyanic acid, HCN, taking up at the same time two molecules of water, H_2O, according to the following equation :

$$C_{20}H_{27}NO_{11}+2H_2O=2C_6H_{12}O_6+C_7H_6O+HCN.$$

Hence this characteristic smell.

On subjecting my sample to a preliminary examination, I at once suspected an adulteration with nitro-benzole, which suspicion was proven to be correct by the further proceeding of the analysis.

250 cc. were subjected to distillation, the retort being heated in a water-bath and the vapors conducted through a Liebig's condenser. The distillate chiefly consisted of alcohol, while the residue in the retort became turbid and milky as soon as the last traces of alcohol distilled off. At the same time it strongly exhibited the smell previously alluded to. A measured portion of the residue was shaken with ether, which on settling formed two distinct and perfectly clear strata of liquid. The upper one was drawn off and evaporated on a watchglass, leaving a yellow, oily liquid, which was identified as a mixture of nitro-benzole, $C_6H_5NO_2$, and fusel oil or amylalcohol, $C_5H_{11}O$. A further separation of these two may be effected by fractional distillation, for which purpose, however, a larger quantity of the original quantity must be taken.

Nitrobenzole—essence of mirbane—$C_6H_5NO_2$, is formed by the action of nitric acid on benzole, C_6H_6, one of the so-called light oils obtained on distilling coal tar. Its formation is illustrated by the following equation: $C_6H_6+HNO_3=C_6H_5NO_2$ and H_2O. It has so far only been used in the manufacture of anilin and its dyes, cheap fancy soaps, and for the adulteration of oil of bitter almonds, C_7H_6O. Its application for flavoring liquors was entirely new to me. It is easily recognized by its behavior to an alcoholic solution of potassa, as well as by its conversion into anilin and the subsequent production of color-reactions.

If an alcoholic solution of potassa is added to nitro-benzole, the latter

is converted into a dark-brown resinous substance, which is insoluble in water (Maisch). Alcohol and ether dissolve it, from which solutions it can be obtained in yellow crystals on evaporation (Zinin's azoxybenzid). Another reaction, advised by Dragendorff, will also allow the detection of nitro-benzole, viz.: The oily residue of the etherial extraction is dissolved in a small quantity of alcohol; on adding a piece of sodium the liquid will assume a dark-brown color and pasty consistence in presence of nitro-benzole, disengaging at the same time a gaseous substance, the formation of which is due to the presence of alcohol.

As to the conversion of nitro-benzole into anilin and the production of its characteristic color-reactions, I can recommend the following modus operandi from my own experience:

A small quantity of the etherial extract of the residue on distillation, previously alluded to, is placed in a test-tube and evaporated to dryness at about 100°F. A few drops of dilute hydrochloric acid and a small quantity of very fine iron filings or ferrum hydrogenio-reductum, together with a sufficient quantity of water, are then introduced in the same test-tube. Nitro-benzole, if present, thus will be converted into anilin by the action of hydrogen in statu nascendi, according to the following equations: $3Fe+6HCl=3FeCl_2+3H_2$; $C_6H_5NO_2+3H_2=C_6H_7N+2H_2O$; or expressed in one equation: $C_6H_5NO_2+6HCl+3Fe=3FeCl_2+C_6H_7N+2H_2O$. As soon as the oily drops of nitro-benzole have disappeared—no matter whether the iron is totally dissolved or not[1]—the supernatant liquid is poured off into another test-tube. It consists of ferrous chloride, $FeCl_2$, and hydrochlorate of anilin, C_6H_8NCl, or $[C_6H_5.NH_2.HCl]$. On addition of caustic soda solution iron precipitates as ferrous oxyhydrate, while anilin is regenerated and can be extracted and separated on shaking with ether, etc., in the usual manner. The etherial extract is evaporated on a watchglass, leaving an oily residue of anilin, which, on addition of a few drops of hydrochloric acid and a small crystal of potassic chlorate, $KClO_3$, is converted into a beautiful blue pigment. The color changes gradually into a light green and disappears entirely in a short time, particularly in presence of small quantities of anilin, as in this case. By placing the

[1] It must be remembered that anilin is strong enough a base to decompose ferrous and ferric salts, and therefore will be in the above solution.

watchglass on a white sheet of paper I was able to detect minute quantities of said body.

Sulphuric acid and potassic bichromate produce a similar reaction; but this test is less reliable, on account of the reduction of chromic acid to chromic oxide by means of organic bodies, which also yields a green solution and thus may give rise to errors.

According to Taylor, nitrobenzole is a narcotic poison, producing death by paralysis, and is particularly dangerous if its vapor be inhaled; fainting and illness for some time has been observed from the use of soap flavored with it in taking a warm bath.

The modus operandi for preparing this liquor was probably as follows: A common grade of alcohol is mixed with its volume of water and flavored with about half a fluidounce of nitrobenzole to the gallon of liquor.

Two nitro-compounds have now already been detected as adulterations in alcoholic beverages: picric acid or trinitrophenol in beer, and nitrobenzole in this "brandy." What next? Nitro-glycerin?

Pittsburgh,
Black Diamond Steel Works, Aug. 14, 1877.

DISPENSING PRESCRIPTIONS.

By Andrew Blair.

Accuracy in receiving, compounding and delivering prescriptions to customers is one of the most responsible duties of the apothecary, and one that receives less attention than it should, and consequently, sometimes occasions errors that are more or less injurious to the apothecary or patient, as the case may be.

Every apothecary in his early business training should be educated to accuracy in compounding prescriptions, as also every other mixture or preparations; but the "receiving and delivering" of a prescription to a customer at the counter is also a very important duty which usually does not receive the care and attention it deserves, and neglect of which often brings trouble and perhaps injury of reputation to the apothecary, and sometimes serious or injurious results to the patient.

Any suggestion, therefore, that can have the least tendency to check errors or mistakes in this department of our business should be received with favor by those interested.

Apothecaries (even those doing a small business) frequently have two or more prescriptions on their counter at one time waiting their turn to be compounded. If a proper record has not been taken of each, when received, it is possible every one may not be delivered to the persons to whom they properly belong, and one of the customers may be handed a prescription that belongs to another. Suppose such was the case, and one party should get a medicine totally different from the one he or she should have received; any apothecary can understand the perhaps serious consequences to the patient and the embarrassment of his relations with the physician as well as the patient in a business point of view. Some will say, perhaps, the patient should have examined the label to see if the directions, doctor's name, etc., were correct.

People usually presume that a medicine is all right, and trusting to their memory the verbal directions of the doctor, or merely glancing at the label to see if it is a teaspoonful or tablespoonful for a dose, think either sufficient.

The following custom has been in operation with the writer for some time and found to work well.

When a new prescription is received from a customer at the counter, the following memorandum is put on the back of it:

The name of the person for whom it is; state if waiting, or to be sent, or to be called for; if to be sent, give the address; if to be called for, state the time; if paid for, or to be collected, or to be charged. If the prescription is an old one, to be repeated, the memorandums are put on a blank form, as follows, and is handed in to the

NAME..
ADDRESS..
IS IT PAID? (YES OR NO) IS IT TO BE SENT? (YES OR NO)
RECEIVED BY..
COMPOUNDED BY..
NOS. OF ℞..PRICES.

prescription department (which is separated from the other part of the store by glass partition), and the prescription clerk has no occasion to ask any questions about it, as all the necessary information is attached to it, and he can compound and deliver it to the customer, or send it, as the case may be, without consulting the one who received it.

The whole form is simple, takes but little time and insures accuracy. It is particularly useful where there are several clerks in a store, as it traces to the proper one any error in the instructions given by the customer to the clerk who receives it, also any error in compounding it.

Frequently prescriptions are sent by servants or youthful messengers to the drug store to be prepared and taken to the patient. It often happens that two or more such individuals are waiting at the same time, and sometimes do not give sufficient consideration to the importance of giving attention to any questions asked them. An example: You have a prescription finished and ready to hand to one of the customers waiting. You ask one "are you waiting for Mr. Johnson's prescripiion?" Answer, "yes." You very naturally give the prescription, thinking it is correct, and the customer leaves your store; when you come to hand customer No. 2 his prescription, you find a mistake has occurred by customer No. 1 thoughtlessly answering yes, instead of no, having in mind the thought that he or she was waiting for some medicine and this must be it. The writer has known of several such cases.

How can this kind of mistakes be avoided? Ask the customer, *whose medicine are you waiting for?* This occasions reflection (trifling though it be), on the part of the customer, whom it is reasonable to suppose will invariably give the correct name to such a question.

Every apothecary is familiar with the extra labels frequently put on prescription bottles, such as "for external use only," "shake before using," "poison," etc. There are cases occurring every now and then for which none of these will answer, viz.:

℞ Tr. Aconite Rad., ... ℥i
Sig. 5 to 10 drops as directed.

You hesitate to put a poison label on this lest you unnecessarily alarm the patient, as it is very apt to do in many cases of nervous affections, who may think either the physician or druggist has made a mistake, as the doctor did not say anything about it being poison.

Still a faithful apothecary does not wish to send it out without some mark to attract attention, so that in the accumulation of family medicine bottles this one may not be picked up and used hastily for some other that might result to the injury of some one.

A "use with care" label frequently answers the purpose.

Then again, there are a class of prescriptions that contain poisonous doses if taken into the stomach by the ordinary tea or tablespoonful.

Sometimes these have directions, "use as a gargle," or "use as injection," or "external use," and very often have only "use as directed." In most of these cases the apothecary can tell the use that is to be made of them, but he should not allow the preparation leave his store store without some mark of caution, still he does not like to use a *poison* label for the same reasons as noted above.

The following suits such cases very well: "caution, this is poison if taken into the stomach," or "caution, this is not to be swallowed."

Keeping poisons, such as morphia, strychnia, etc., in a separate apartment or closet is a rule that should be adopted in every apothecary store. The importance of this is too plain to every apothecary to need any comments. The writer knows of an arrangement that has worked well for several years and answered the purpose for which it is intended. It consists of a closet with double doors, purposely placed in an awkward position, and opened and closed in a very inconvenient manner. The object of this is to attract the attention of the operator and thereby incline him to give special attention to what he is doing; one of these doors is constantly forced outward by a spring, the other door overlaps it at the centre and has a fixture on it that attaches itself (when closed) to a spring hook inside of the closet, which is operated by a cord. As soon as the cord is pulled the hook is lifted, and both doors fly open.

To shut the closet it is necessary first to close the door with the spring attachment, and hold it till the other door is closed upon it and the hook has caught. You cannot possibly shut the spring door unless the other one is *properly closed also.*

The matters briefly alluded to in this article may seem trifling to some, but they are important and necessary to the successful carrying on of the apothecary business, especially as the public expect so much of the apothecary, it requires him to employ every possible device to prevent an improper use of the medicines dispensed by him.

AMMONIUM CARBONATE and FAHRENHEIT UP in the NINETIES.

By Hans M. Wilder.

A friend of mine tells the following: Came a prescription calling for $2\frac{1}{2}$ drachms of carbonate of ammonium in $1\frac{1}{2}$ fluidounce of syrupus acaciæ. When made it was poured into the bottle and corked; after

a few minutes the cork flew out, and nearly half the contents were thrown out. Thinking that the syrup in question perhaps had become acid, it was extemporized with powdered gum arabic and simple syrup; again an explosion. Simple syrup gave a similar result, and a trial with only distilled water went no better. It became clear now that the decomposition of the salt was solely due to the high temperature. By using half ice water and syrupus acaciæ no evolution of carbonic acid gas took place.

It would be interesting to learn whether similar mishaps have been experienced by other pharmacists.

The question arises, whether physicians will put up with this quite unavoidable loss of carbonic acid gas, or whether they can forego the use of carbonate of ammonium in summer time. One thing seems certain, that concentrated solutions of this salt have to be made and kept with ice. (Concentrated: 1 part carbonate of ammonium requires 4 parts water.)

LIQUOR POTASSII ARSENITIS.

By John C. Wharton.

In some of the old editions of the U. S. Pharmacopœia this preparation is directed to be made by dissolving *sixty-four grains* each of *arsenious acid* and *carbonate of potassium*, by the aid of heat, in twelve fluidounces of distilled water, and after solution adding half a fluidounce of spirit of lavender compound and sufficient distilled water to make the cold solution measure one pint.

In the last edition of the U. S. P. the formula requires that *bicarbonate of potassium* shall be substituted for the carbonate above referred to, and to effect the solution of the arsenious acid and bicarbonate of potassium by boiling them with half a fluidounce of distilled water, then adding distilled water twelve fluidounces, compound spirit of lavender half a fluidounce, and lastly sufficient distilled water to make the cold solution measure one pint.

The latter formula is doubtless better than the former, in at least two particulars. It requires no excess of alkali, in fact if both acid and alkali are of theoretical purity, there is a deficiency of the bicarbonate of potassium to the amount of nearly one grain, and sixty-five grains of that salt would be the proper amount to be used. An improvement in the manipulation is made by the use of only half a fluid-

ounce of water instead of twelve fluidounces, as a more concentrated solution of the potassium salt is formed and hastens the action during the heating process. The substitution of the bicarbonate for the carbonate is perhaps of no great importance, except as lessening the alkalinity of the finished product, as above noticed, and furnishing a slightly purer salt, practically of no advantage to the preparation.

There still seems room for improvement, and the following process is offered as such. Its merit consists in easy and rapid execution and simplicity of apparatus required, also the large amount that may be produced with vessels of small capacity.

Take of	Arsenious acid in small pieces, .	*sixty-four grains.*
	Potassa (hydrate, fused), .	*thirty-six grains.*
	Compound spirit of lavender, .	half a fluidounce.
	Distilled water, a sufficient quantity.	

Rub the arsenious acid to a fine powder in a small glass or porcelain mortar, add the potassa and *one fluidrachm* of distilled water and triturate thoroughly together until a slightly creamy solution is formed. Then carefully pour the yet imperfect solution into a test-tube or small evaporating dish and apply heat until perfect solution is effected. Pour the hot solution carefully back into the mortar, and stir it with the pestle to take up the portion of syrupy liquid that adhered to their surfaces in the act of first emptying the mortar. Should the hot solution not effect complete solution of the remainder in the mortar, return the mixed liquids into the test-tube, apply heat, and repeat the rinsing of mortar and pestle as before. Proceed thus till all the arsenious acid is completely dissolved, then add twelve fluidounces of distilled water, rinsing mortar and pestle and test-tube with the same, and mix the different portions in a suitable graduated measure. Then add the compound spirit of lavender, and finally sufficient distilled water to make the whole product measure one pint; filter.

By this method I am sure that the whole may be finished in ten minutes or less, except filtering, which is advisable in order to remove a very little silica that is nearly always a constituent of hydrate or caustic potassa. The gain in time and facility of making the solution arises principally from two sources; in the first place a most potent form of the alkali is substituted for a weak one, and, secondly, by the use of a very little water a decidedly concentrated solution of the potassa is brought in contact with the arsenious acid. But there are two other,

rather incidental, advantages. One of these is that a considerable heat is produced by the action of the water on the fused potassa, which aids solution; the other consists in the readiness with which the arsenious acid may be triturated with the concentrated solution of potassa. This is due to the "syrupy" consistence of the liquid, and as solution rapidly progresses, the viscidity increasing makes the admixture quite an easy matter. It will present a great contrast in this respect to the behavior of the arsenious acid in former processes.

NOTE on the INCOMPATIBILITY of STRYCHNIA with certain SALINE SOLUTIONS.

By A. B. Lyons, M.D.

The solubility of the various salts of so powerful a remedy as strychnia ought to be familiarly known to all physicians and pharmacists. I find, however, that the text-books in common use are remarkably reticent on the subject. That the sulphate of strychnia is preferred to the alkaloid itself, on account of its greater solubility, and that the iodide of strychnia is a salt sparingly soluble in water, are about the only facts elicited by consulting Wood and Bache.

My attention was directed to the subject by a case of accidental poisoning by strychnia, which lately came to my knowledge. The circumstances were these: A lady had been taking medicine from a bottle prepared after the following prescription:

℞	Pot. brom., ...	℥ii
	Strichniæ (*sic*), ...	gr. ii
	Syp. auranti.	
	Aqua dist. (*sic*), ...	*āā* ℥iv
	M. Sig. A teaspoonful every 4 hours.	

No disagreeable effects had been produced by the medicine, of which, if I am rightly informed, she had already taken up one full bottle. Soon after swallowing the last dose, however, from this bottle, she was attacked with spasms, and exhibited all the symptoms of poisoning by strychnia. On examining the glass from which the medicine had been taken, and which had been afterwards filled with water, I found a much larger proportion of strychnia than should have remained adhering to the glass, had it been in solution in the proportion called for by the prescription, viz.: about 1 : 1800. Evidently, a portion of the

strychnia had either never been dissolved, or had separated from the strongly saline solution after it was dispensed. The latter I suspected to be the truth, and I accordingly made a few experiments, demonstrating the possibility at least that this was the explanation of an accident that seemed to inculpate either the physician or the apothecary.

Having prepared a neutral solution of strychnia sulphate, containing one grain to the ounce, I attempted to dissolve in it potassium bromide to saturation. A bulky crystalline precipitate of a strychnia salt (doubtless hydrobromate) at once formed. With smaller proportions of the bromide the precipitation did not take place so rapidly. When the quantity did not exceed two drachms to the ounce, crystals formed only after an interval of some minutes, and the same result was obtained in experiments where the quantity of strychnia was reduced.

The precipitated salt of strychnia was not perceptibly redissolved by the addition of a considerable excess of hydrobromic or of sulphuric acid.

Substituting sodium bromide for the potassium salt, I obtained similar results, although the strychnia did not appear to be so completely thrown out of solution as by the latter salt. Potassium iodide, three drachms to the fluidounce, produced at once a crystalline precipitate in a solution containing one grain of strychnia to the ounce. Sodium chloride gave results very similar to those obtained from potassium bromide. Thirty per cent. of the salt, dissolved in a one grain solution of strychnia, rendered it quite thick with the precipitated salt. Even eight per cent. induced a prompt crystallization of the strychnia salt.

Finally, I compounded the prescription given above strictly *secundum artem*, dissolving first the strychnia, then the potassium bromide in water, and adding the syrup; in a short time a crystalline preciiptate began to form, and now, at the end of twelve hours, there is a considerable sediment in the bottom of the bottle, which doubtless contains a considerable proportion of the strychnia.

I have made a few experiments with other salts, such as potassium nitrate, sodium sulphate, etc., but do not find that they diminish the solubility of strychnia to the same extent as the chlorides, bromides and iodides. I propose to give the whole subject a more careful examination, and to communicate the results at some future time; but meanwhile I have judged the facts already observed to be of sufficient importance to both physician and pharmacist to demand that they be

made widely known, even in the crude form in which I have presented them.

The practical conclusion I wish to emphasize is, that it is unsafe to prescribe strychnia in solution with iodides, bromides, or even chlorides, in anything approaching a saturated solution. If such prescriptions are dispensed, the directions to "shake the bottle" ought to be made so prominent that they could not possibly be disregarded.[1]

Detroit, Mich., Sept. 5, 1877.

ON JURUBEBIA, THE ALKALOID OF THE SOLANUM PANICULATUM, Lin.

By Francis V. Greene, M. D., U. S. N.

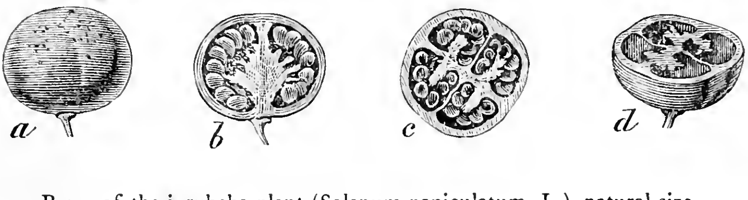
In the collections of Brazilian medicinal plants at the Exposition in Paris, in 1867, the Brazilian National Exposition in Rio de Janeiro, in 1875, and the Centennial Exhibition in this city, were displayed several specimens of the berries of the Jurubeba plant, the expressed juice of which has long been in use in domestic practice in Brazil in affections of the liver and spleen, and likewise in dropsies, vesical catarrh and diseases of the skin. In consequence of the excessive bitterness of the juice, and the impossibility of procuring the fresh fruit at all periods of the year, the Brazilian pharmacists, and more particularly Ferreira Maia & Co., of Pernambuco, have for some years prepared from the berries an extract, syrup, wine and plaster, all of which were to be found among the Brazilian pharmaceutical preparations exhibited at the above-mentioned expositions.

Jurubeba, which is also known as the *juripeba*, *jupeba* or *jubeba*, is the *Solanum paniculatum* of Linnæus, and one of the two solana described by Pison (Brazil, 85) under the name of *juripeba*, the other being, according to Dunal (Dict. Univ. Mat. Méd., 1834, vol. vi, p. 422), the *Solanum toxicarium*, growing in Guiana, and used by the natives as a poison. Spix and Martius state that "the juice of the crushed leaves and fruit of the juripeba is used in obstructions of the abdominal viscera, particularly of the liver, and in vesical catarrh. Several other species of solanum are used in like affections, and are applied fresh to the surface, with an ordinarily favorable effect on the cicatrization of

[1] A case of poisoning by strychnia, under somewhat similar circumstances, was reported in "Amer. Jour. Phar.," 1870, p. 309.—Editor.

wounds and ulcers" (Jour. de Chem. Méd., v, 423, from Voyage to Brazil). Merat and De Lens (Dict. Univ. Mat. Méd., vi, p. 419) refer to the use of the juice of the leaves and fresh fruit of the jurubeba in the Antilles, where it is known as the *croc de chien* and is much esteemed in the treatment of the affections mentioned above. They also state that Pison had used the decoction of the root with decided success in the treatment of dropsical affections. In his "Herbarium Floræ Brasiliensis, Monachii," 1837, p. 157, Dr. C. T. Ph. de Martius states that the Solanum paniculatum, Lin., is the true jurepeba of Pison, a drawing of which is given in the latter's work on Brazil (p. 84) and also in Marcgraff (p. 89, edit. 1648). He also states that there is a variety with sub entire leaves, which is described in Velloso (Flor. Flum., t. ii, p. 124) under the name of *Solanum jubeba*, which signifies soft berry, from the words *juia*, berry or fruit, and *beba* or *peba*, soft.

The jurubeba, which is described by Linnæus (Spec. Plant., vol. i, p. 267), by Aublet (Plant. de Guiane, vol. i, p. 216), more fully by De Candolle (Pro., xiii, p. 197), and in the Universal Herbal (edition 1820, vol. ii, p. 597) of Thomas Green, under the name of the *paniclea nightshade*, is a plant with a fruticose and prickly stem; leaves, according to the variety, of which there are two, either cordate sinuate, or



a Berry of the jurubeba plant (Solanum paniculatum, L.), natural size.
b Vertical section.
c Transverse section, with seeds in situ.
d Same, with seeds removed, showing membranous character of the dissepiments.

lobed or incised; flowers terminal, disposed in panicles, and fruit a four-celled spherical berry, each cell containing from twelve to fifteen small flattened seeds of a light-brown color, imbedded in a semi-transparent juicy pulp; pericarp thin and of an olive-green color. According to Chernovix (Formulario, 9th edit., p. 508) all parts of the plant contain mucilage and a bitter principle. The plant grows in the vicin-

ity of Bahia, at Cape Fio, in the provinces of Pernambuco, Ceara, Minas Geraes, Santa Catharina, and in other parts of Western Brazil. It flowers in December.

The term *juripeba*, by which the Solanum paniculatum is known in some parts of Brazil, has also been applied by botanists to a large number of solanaceous plants. A reference, however, to De Candolle (Pro., xiii, p. 30) will show that although the juripeba and the S. paniculatum are both placed in section II of the solanaceæ, the former come under the sub-section Euleptostemonum, while the latter appears among the Torvaria. Furthermore, *jurubeba* or *jubeba* must not be confounded with another Brazilian plant, the *jumbeba*, which belongs to the cactaceæ.

At the close of the Centennial Exhibition I received, through the kindness of the Brazilian Commissioners, a few ounces of the jurubeba berries, and likewise small quantities of a syrup, wine and plaster of jurubeba, prepared at the Pharmacia Americana, of Ferreira Maia & Co., Pernambuco. For the purpose of determining whether the berries and the preparations made therefrom contained solania or other alkaloid, I have lately examined the different articles as thoroughly as the limited quantities at my disposal would permit, with the following results.

As a preliminary examination of a small quantity of the dilute alcoholic liquid, in which the berries were preserved, rendered it probable that solania was present, the crushed berries, amounting to less than three ounces, were exhausted with 75 per cent. alcohol, and, the preserving fluid having been added, the whole liquid was filtered and evaporated to a soft extract, which was exhausted with water acidulated with acetic acid, and the solution filtered. To this filtrate ammonia was added in slight excess; the grayish precipitate produced, was separated by filtration, washed, dissolved in acetic acid, and reprecipitated by ammonia, by which treatment it was rendered nearly white. It was then dissolved in dilute sulphuric acid, and the solution placed over sulphuric acid under a bell-glass. After the evaporation of the liquid, there remained a slightly yellowish mass, composed of prismatic crystals, which on being ignited on platinum foil left a very considerable residue. Further examination of these crystals proved that they were composed of ammonio-phosphate of magnesia, with a small amount of coloring matter.

The filtrate of the precipitate with ammonia was then evaporated to a small bulk, and extracted with distilled water acidulated with acetic acid; the filtered solution was evaporated to a soft extract, treated with sodium bicarbonate in excess, and shaken with ether. The etherial solution was neutral to test paper. On evaporating the ether, there remained a semi-transparent viscid mass, with a bitter taste and slightly aromatic odor, sparingly soluble in water, but readily soluble in ammonia, alcohol and chloroform. Sulphuric acid added to a small portion produced a dark-red color, nitric acid gave merely a darker shade of yellow. On adding very dilute hydrochloric acid to the mass, it dissolved, with the exception of a small quantity of a dark resinous substance. The filtered solution gave the following indications of the presence of an alkaloid: With phosphomolybdic acid it produced a yellow precipitate, which was dissolved by ammonia, giving a blue solution that became colorless on boiling; with sodium phospho-tungstate it gave a white flocculent precipitate; potassio-cadmic iodide also threw down a white precipitate (distinction not only from solania, but from glucosides and neutral substances in general); potassio-mercuric iodide formed with it a yellowish-white precipitate, soluble in acetic acid and in excess of the precipitant; with iodine in iodide of potassium solution it gave a yellow precipitate, and with tincture of galls a white precipitate, soluble in acetic acid, insoluble in ammonia. A yellow precipitate was also afforded by auric, but none by platinic chloride. Nitrate of silver and potassio-cupric sulphate gave white precipitates, which were not reduced by heating. Mercuric chloride and perchloride of iron threw down white precipitates. Picric and chromic acids did not yield precipitates.

The remainder of the solution evaporated over sulphuric acid left a slightly yellow semi-transparent mass, containing numerous stellate groups of acicular crystals, which, dissolved in distilled water and separated from a small quantity of insoluble dark resinous matter, recrystallized of a somewhat lighter color.

The preparations of the berries were then examined to ascertain whether they contained a substance giving the same reactions. The wine (about four fluidounces) was evaporated to a soft extract, which was extracted with distilled water acidulated with acetic acid, and the filtered solution reduced to a small bulk, treated with sodium bicarbonate in excess, and extracted with chloroform. The plaster, which was evidently composed of an extract of jurubeba and lead plaster, was

digested with dilute hydrochloric acid, the precipitated chloride of lead separated by filtration, and sulphuretted hydrogen gas passed through the filtrate to remove all traces of the lead salt. The filtrate from the sulphide of lead was then treated in the same manner as the wine, chloroform being used in this case also as the solvent of the nascent alkaloid. To the syrup (four fluidounces), largely diluted with water, phosphomolybdic acid was added as long as a precipitate was produced. The supernatant liquid having been decanted, the precipitate was washed with water containing phosphomolybdic and nitric acids, and solution of hydrate of baryta added to it while still moist until the mixture gave a decided alkaline reaction. It was then treated with carbonic acid gas, evaporated to dryness on a water-bath, and the alkaloid extracted from the carbonate of baryta by alcohol. The alcoholic solution was found to be neutral to test paper, as was also the case with those obtained from the wine and plaster by means of chloroform. The residues from these solutions, which were precisely similar in appearance to those obtained from the berries, were treated with very dilute sulphuric acid, and the filtered solutions tested, with the result of giving reactions that corresponded exactly with those furnished by the solution of the chloride derived from the berries. Crystals were not obtained by evaporating these solutions, the residues being semi-transparent, amorphous, resinous masses of a light yellow color.

Although the quantity of material operated on was too small to admit of the separation of the active principle or its salts in a sufficiently pure state to determine either their precise chemical characters or to investigate their physiological action and therapeutic effects, the above experiments show conclusively that the substance extracted by the processes mentioned differs in many respects from the glucoside solania and the known alkaloids of the solanaceæ. I would therefore propose the term *jurubebia* to designate the alkaloid contained in the berries of the Solanum paniculatum.

An examination of the ash of the jurubeba berries proved that it was composed mainly of lime and magnesia, in combination with carbonic and phosphoric acids.

THE STRENGTH OF TINCTURA OPII.

By John M. Maisch.

Attention has been repeatedly directed to the variability in the strength of some officinal preparations. Quite a number must be expected to differ more or less, even if prepared by precisely the same process, the variation depending upon differences in the constitution of the crude drugs, which are sometimes very considerable, as is well known to be the case with opium. Since, however, the Pharmacopœia directs dry opium to contain not less than 10 per cent. of morphia, the morphia strength of the galenical opium preparations should not fall below that standard if the valuation of opium was not neglected by many pharmacists. But even with the same opium there is a possibility of arriving at a deficiency in strength, amounting to from 6 to 10 per cent., if the drug be employed merely air-dry or be previously dried at or near the temperature of boiling water until it ceases to lose weight. Tincture of opium being very frequently used as a domestic remedy, some apothecaries have adopted the dangerous practice of keeping on hand two kinds, one made according to the Pharmacopœia formula, intended for dispensing in prescriptions, and another weaker tincture for ordinary sales. The latter is then always diluted, and occasionally to such an extent that it bears little resemblance to the officinal tincture except in name, the deficiency in color being compensated by the addition of licorice or caramel; laudanum sold by country storekeepers is very generally of the latter class.

The strength of tincture of opium as ordinarily sold has been the subject of investigation by three students of the Philadelphia College of Pharmacy, class 1876–77. Mr. Jos. Stahle Smith merely determined the amount of extract left on the evaporation of one fluidounce of the tincture, five samples giving the following results: 21·5, 15, 11·5, 9·5 and 8 grains. Each fluidounce represents 37·5 grains of dry opium, which on an average yields 60 per cent. or 22·5 grains of extract; the presumption therefore is that of the five samples examined only one was made in accordance with the Pharmacopœia.

Mr. Wm. H. Llewellyn ascertained not only the amount of extract, but separated also the morphia from one fluidounce of commercial laudanum, using for the latter operation a modification of Staples' process; his results were as follows:

Extract from 1 fluidounce,	15·	15·	16·	15·50	23·25	28·75	30·	32·	37·	39·50 grs.
Morphia " "	4·	3·75	3·	3·25	2·	1·75	1·	1·	·5	trace.

Opium of officinal strength should yield 3·75 grains of morphia per fluidounce of laudanum. While some of the samples come up to this requirement, it is noteworthy that they fall short in the amount of extractive matter as usually met with in Smyrna opium; on the other hand, it is plain that at least one-half of these tinctures, which are very deficient in morphia, were artificially colored, with the view of imparting an appearance of strength which they did not possess.

Another series of experiments with laudanum sold at retail was made by Mr. Burt P. Gates, who determined the specific gravity at 60°F. by means of a 1000-grain bottle, and made two morphio-metric assays, following Staples' process with some modifications; his results are tabulated as follows:

Specific Gravity.														
·965	·952	·962	·956	·958	·955	·953	·949	·956	·943	·947	·956	·939	·950	·881
Morphia per fluidounce.														
3·85	3·70	3·54	3·39	2·96	2·62	2·77	2·46	2·16	2·08	2·00	1 85	1·63	1·39	0 77
Percentage.														
10·3	9·9	9·4	9·0	7·8	7·0	7·4	6·6	5·7	5·6	5·3	4·9	4·4	3·7	2·1

Only three of these samples can be assumed to have been made from well dried opium; five appear to have been made from imperfectly dried or from more or less moist opium; the remaining seven, of which five are also deficient in density, have apparently been made of less opium than officinally directed.

CALCII PHOSPHAS PRÆCIPITATA.

By Ed. Hirschsohn.

It having been for a long time a desideratum to find a process the product of which fulfills the following conditions: constant composition, crystalline texture, easily soluble in diluted acids of about the strength of the gastric juice (for instance 0·03 per cent. muriatic acid), and the largest possible yield, Dr. Dragendorff induced Hirschsohn to examine into the merits of the different methods.

After mentioning that Stoeder and Opwyrda came to the result that the "calcined bones" process (see among others the United States Pharmacopœia) gives a somewhat satisfactory product only by precipitating the strongly acid solution with ammonia in slight excess, and that

they strongly recommend the chloride of calcium and phosphate of sodium process, H. gives the result of his experiments as follows:

Dissolve 100 parts anhydrous chloride of calcium in 4 parts of cold water and 187 parts phosphate of sodium ($Na_2HPO_4+12H_2O$) in 30 parts of cold water. Pour the phosphate solution at once (not gradually) into the chloride solution, stirring continuously, and throw on a filter as soon as practicable; wash and dry at a temperature not exceeding 90 to 100°F. The yield will never be more than corresponding to half the quantity of chloride of calcium used; the composition of the salt will be constant ($CaHPO_4+12H_2O$) and only after being heated to about 230°F. it will be converted into $CaHPO_4+2H_2O$. The precipitate is quite bulky, 35 grams filling a 100 grams measure, is easily separated from the liquid by filtration, and easily washed.—H. M. W., extracted from *Ny pharm. Tid.*, 1877, p. 259.

THE TWENTY-FIFTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

FIRST SESSION, Tuesday, September 4.

The opening of the meeting was delayed until four o'clock, on account of the late arrival of the boat from Niagara River. By that time a goodly number of members had reached the Council Chamber of the City Hall, where the sessions were to be held, and President Bullock called the meeting to order; the Secretary, Treasurer and Chairman of the Executive Committee were present to attend to their duties, and H. S. Wellcome acted as Chairman of the Business Committee.

Alderman Wright, of the city of Toronto, stepped forward, and, after apologizing for the absence of the Mayor, extended a cordial welcome to the members and their ladies, expressed the hope that the meeting would be a satisfactory one, and formally placed the Council Chamber and the adjoining rooms at the disposal of the Association. President Bullock responded and expressed thanks.

Messrs. R. S. Woodruff, of Connecticut, A. B. Petrie, of Ontario, and E. T. Dobbins, of Pennsylvania, were appointed a committee to examine the credentials. While that duty was being attended to the President read his annual address, dwelling upon the fact that this was the first meeting held under the folds of the British flag, and that science knew no geographical and political boundaries; he then gave a sketch of the rise and progress of pharmacy, and referred briefly to its influence on the development of chemistry and the benefits derived by it from that science, concluding with a review of some of the questions to come up for discussion and final disposition.

Mr. Sheppard moved the thanks of the Association for the able and interesting address, and proposed the appointment of a committee of three to take into consideration and report on such of the President's suggestions which may require action by the Association. The motion was carried.

A letter was read from Mr. Benj. Lyman, of Toronto, regretting his inability to attend the meeting, he being unavoidably absent in Europe. An invitation by Messrs. Godderham & Worts to visit their extensive distillery was accepted with thanks. Invitations were extended to Prof. Henry Croft and the other members of the faculty of the University of Toronto, also to the medical profession who may feel interested in the proceedings, to attend the sessions.

The Local Committee of the meeting of 1876 presented a report through Dr. A. W. Miller, tendering to the Association an unexpended surplus amounting to $525, as the foundation of a "Centennial Fund," under the conditions that a like amount be raised by the Association within one year, and that the interest of this fund be used solely for aiding original investigations. The report was accepted and referred to the Committee on the President's Address for consideration and report. This committee was then constituted as follows, E. P. Nichols, of New Jersey; John Ingalls, of Georgia, and T. J. Casper, of Ohio.

The Committee on Credentials reported delegations from seven colleges of pharmacy, four alumni associations, five State and four county and city pharmaceutical associations. Members of the Chicago College of Pharmacy, and of the Pharmaceutical Associations of Michigan and South Carolina, from which bodies credentials had not been received, were requested to act as delegates.

The reports of the various standing and special committees were called for and laid upon the table, after which the Nominating Committee was constituted by appointing on it one member from each delegation, and through the chair the following five members from the Association at large: Messrs. Edm. Gregory, of Ontario; Z. J. Belt, of Delaware; J. A. Miller, of Pennsylvania, and Wm. Neergaard and A. S Lane, of New York.

Mr. Kennedy read the annual report of the Executive Committee and J. M. Maisch the supplementary report of the Secretary; both reports dwelled upon the fact that there is considerable room for improvement in the financial affairs, and suggested the creation of a sinking fund. The reports were accepted and referred to the Committee on the President's Address.

Mr. William Elliot, President of the Ontario College of Pharmacy, extended invitations to the members and their ladies to several entertainments and to an excursion to Lake Rosseau. The following inviation was likewise presented:

The Junior Pharmacists of Toronto request the pleasure of your company in camp at Sparrow Lake, to spend a few days under canvas. Leaving the city at 7 A. M., Saturday, 8th inst., *via* Northern Railway to Severn Bridge, where boats will be in waiting to convey the party to the camping ground. A supply of fishing tackle will be provided, and it is hoped that two or three days may be agreeably spent in botanizing, geologizing, piscatorializing, etc.

To such as may be strangers to a Canadian camp life, it would only be fair to give an idea of the hardships to be encountered, lest our visitors might be disappointed.

"Firstly."—No feather beds or mattresses, but two blankets, and plenty of cedar brush; this can hardly be called a hardship, because it makes a soft bed.

"Secondly."—No sofas or chairs, but *very* firm seats may be secured, in fact are already secured, free of charge—the rocks are very hard.

"Thirdly."—Pabulum, not what might be called *first-class hotel fare*, but three meals a-day, will be selected from the following:

INFUS. ADDENDA.

Dec. Caffeæ c. Lacto et Sacch.,	Inf. Theæ,
Rasuræ Porci,	Solanum Tuberosum,
Querquedula Ferox,	Tetrao Umbellus,
Numenius Aquata,	Trinza Variosa,
Perca Fluvialis,	Perca Labrax,
Esox Lucius,	Panis,

Biscocti, etc.

And other dishes, to be gathered from the forest and streams, depending to a large extent on our own activity and skill.

These are the hardships.

In place of dessert, you are expected to take in the surrounding scenery, as being more digestible. It is not essential to open the mouth for this purpose.

Campers leave the railway at Severn Bridge. Fare for the round trip, $3.00.

N.B.—Committee must have acceptances by Wednesday at noon at latest, to make arrangements.

No. 2. N.B.—Smoking allowed.

The invitations were greeted with applause and accepted with thanks.

After the appointment of the following Committee on Specimens: Messrs. H. J. Rose, Toronto; G. F. H. Markoe, Boston; Chas. Rice, New York; T. R. Baker, Richmond, and A. E. Ebert, Chicago, the Association, on motion, adjourned until Wednesday morning at 9 o'clock.

SECOND SESSION, Tuesday Morning, September 5th.

After the reading and approval of the Minutes, the credentials of the Chicago College of Pharmacy and Maine Pharmaceutical Association were received, and the report of the Nominating Committee read, the nominees being elected, as follows:

President, Wm. Saunders, London, Ontario.

First Vice President, Ewen McIntyre, New York.

Second Vice President, John Ingalls, Macon, Georgia.

Third Vice President, Emlen Painter, San Francisco, California.

Treasurer, Charles A. Tufts, Dover, New Hampshire.

Permanent Secretary, John M. Maisch, Philadelphia, Pennsylvania.

Reporter on Progress of Pharmacy, C. Lewis Diehl, Louisville, Kentucky.

Executive Committee—Geo. W. Kennedy, chairman, Pottsville, Pa.; Homer P. Tarrant, Augusta, Ga.; Albert L. Calder, Providence, R. I.; James G. Steele, San Francisco, Cal.; John M. Maisch, Permanent Secretary *ex-officio*, Philadelphia.

Committee on Drug Market—W. H. Wickham, chairman, New York; T. Roberts Baker, Richmond, Va.; Solomon Carter, Boston; Henry W. Fuller, Chicago; Christian F. G. Meyer, St. Louis.

Committee on Papers and Queries—Edward P. Nichols, chairman, Newark, N. J.; Edward Shuttleworth, Toronto; M. L. M. Peixotto, New York.

Business Committee—Henry J. Menninger, chairman, Brooklyn; Henry S. Wellcome, New York; Wm. Simpson, Raleigh, N. C.

Committee on Prize Essays—C. Lewis Diehl, chairman, Louisville; John F. Judge, Cincinnati; Emil Scheffer, Louisville.

Committee on Legislation—John M. Maisch, chairman, Philadelphia; Samuel A. D. Shephard, Boston; Adolph Pfeiffer, St. Louis.

Messrs. Diehl and Ebert conducted the President elect to the chair, who expressed thanks, and counseled close attention to the business and moderation in the debates, even when differing widely in opinion. The Vice Presidents elect who were present were then likewise introduced.

The Executive Committee reported the applications of thirty-five candidates for membership, one of whom was withdrawn, and the remaining thirty-four elected.

The Treasurer's report, which was now read, accounted for expenditures during the past year of $5,559.98, and a balance on hand of $954.39; related the indifferent result of calling in the certificates of membership from former members, and referred to the life-members under the old constitution, suggesting that they voluntarily pay the net cost of the Proceedings which they now receive free of charge. The accounts were ordered to be referred to an auditing committee of three, consisting of Messrs. Eberle of Pennsylvania, Gregory of Ontario, and Rogers of New York.

Mr. Ingalls extended an invitation to the Association to hold its next annual meeting at Atlanta, Ga.; a similar invitation from Cincinnati was read, and some discussion was had as to the best time for holding a meeting in the Southern States. The invitations were referred to Messrs. Remington of Pennsylvania, Baker of Virginia, and Ebert of Illinois for consideration and report.

The introductory part of the report on the Progress of Pharmacy was read by Mr. Diehl, and referred for publication.

The following reports of committees were read: On Prize Essays (see this journal, p. 265), on Legislation, on Adulterations and Sophistications, and on the Centennial Exhibition, the latter being supplementary to the one published in the last Proceedings. The suggestions contained in the report on Prize Essays were subsequently referred to the new committee to be reported on next year.

After fixing the hour of the next session the Association in a body paid a visit to the Exhibition Room, to examine the numerous specimens.

THIRD SESSION, Tuesday Afternoon, September 5th.

The Minutes of the previous session were read and approved. The amendment to the By-Laws, lying over from last year, requiring a motion for expulsion to be laid over to a subsequent session, was discussed, and received 19 affirmative against 7 negative votes.

The committee on the place and time of the next annual meeting reported in favor of Atlanta, Ga., and proposed to meet there on the third Tuesday of September next. The time was changed to the first Tuesday of the same month, and the report then adopted.

His Worship, Angus Morrison, Esq., Mayor of Toronto, was introduced, and welcomed the Association to the city and to the hall in which the meeting was held.

Dr. Nichols presented the report of the committee appointed to consider the suggestions made by the officers. The first portion, relating to the Centennial Fund in aid of original investigations, was approved and adopted, and the whole subject placed into the hands of a committee consisting of the chairman of the Executive Committee, the Treasurer and Permanent Secretary, who were empowered to securely invest the money and to raise $525 or more from the members. The second portion of the report referred to the financial condition of the Association and to the relation of the life-members; and since it involved alterations of the By-Laws, was laid over.

Scientific papers being called up, the following were read:

On the substitution of parts by weight for absolute quantities in the Pharmacopœia, Prof. Sharples, in a brief communication, reiterated the views expressed the year before.

On Cantharidal Collodion.—Mr. Joseph Roberts suggested to displace the cantharides with a mixture of equal parts of alcohol and ether, in order to render the gun cotton more freely soluble in the percolate.

On Oleates.—Mr. Wm. S. Thompson communicated a number of formulas for preparing medicinal oleates and ointments of oleates.

On Veratrum Viride.—Dr. C. A. Robbins corroborated the observations of Mr. Bullock concerning the non-existence in this rhizome of veratria and the presence of jervia. From the resinous matter the author reported having separated another alkaloid, for which the name of *Veratridia* is proposed, and the pysiological and chemical relations of which had been investigated. It was to be regretted that a sample of this alkaloid was not exhibited, which would have completed the chemical history of the American veratrum in connection with the handsome preparations placed on exhibition by Mr. Chas. Bullock, as the results of his long-continued investigations.

On a false Senega-root.—Mr. Maisch stated that he had traced the so-called *white senega-root*, which occasionally appears in commerce, to Greene county, Mo., where it is collected, but he had been unable to procure specimens of the plant, or even of the root.

The root of Epilobium Angustifolium.—Mr. C. J. Biddle reported that it had been used with success in the Philadelphia Hospital in the treatment of aphthæ. A partial analysis revealed the presence of large quantities of tannin and mucilage, also starch, sugar, resin and a crystalline calcium salt.

The Compound of Chloral Hydrate and Camphor.—Mr. Jos. Roberts adopts the view of E. C. Saunders ("Am. Jour. Phar.," 1876, p. 462), that the liquid resulting from the union of the two bodies is merely a solution of chloral in camphor.

On Extract of Aloes.—Mr G. W. Kennedy obtained with hot water 36 per cent. more extract than with cold water; but the latter was more aromatic, less griping and equally effective in a much smaller dose, 2 grains producing the same effect as 3 grains of the hot water extract.

On Aloin.—Mr. A. P. Brown found that barbaloin possesses about the same purgative effect as an equul dose of Barbadoes aloes, and that the extract obtained by evaporating the mother liquor from which aloin has been deposited was nearly destitute of purgative properties.

On Lactucarium.—Mr. Joseph L. Lemberger reported that a concentrated liquid preparation may be made, and promised to furnish a formula next year.

FOURTH SESSION, Thursday Forenoon, September. 6.

The committee on the officers' reports presented a proposition to amend Chap. vi, Art. iv of the By-Laws, so as to require life members under the old constitution to pay $3.00 annually for the Proceedings The subject was ordered to be referred to a special committee.

A paper on **Magnesia** by Mr. Geo. Leis was read, in which the author reported commercial carbonate of magnesium to contain 39·72 to 40·75 per cent. MgO; Jenning's light calcined magnesia was found to contain 78·01, Husband's 90·33 and Powers & Weightman's 95·46 per cent. MgO; in two of the samples about one per cent. of Na_2O was found.

Mr. Saunders read the report of the committee on the drug market, in which he dwelt upon the difference between the drug market of the United States and Canada and referred to the nature and supply of Canadian drugs.

The resolutions of Dr. Squibb, concerning a change in the revision of the Pharmacopœia, which had been laid over from last year, were called up, and the subject was dropped at the mover's request. Mr. Sheppard then presented the following resolution, which was unanimously adopted:

Resolved, That while there may be among the members of the American Pharmaceutical Association an honest difference of opinion as to the advisability of the plan suggested by Dr. Squibb, the thanks of the Association be and are hereby tendered to Dr. E. R. Squibb, of Brooklyn, N. Y., for his earnest efforts during the past two or three years to inaugurate an improvement in the plan of revision of the U. S. Pharmacopœia.

Dr. Fr. Hoffmann introduced a lengthy preamble, which was subsequently modified to meet the views of several members, and the following resolution:

Resolved, That the President of this Association appoint a committee of five to take into consideration the advisability and feasibility on the part of the American Pharmaceutical Association, as the national representative organization of the profession of pharmacy, to prepare a complete Pharmacopœia, which may be submitted to the criticism of the medical and pharmaceutical professions, and may be proposed to the final Committee of Revision, and that that committee be instructed to report early at the next session, so as to leave time for definite action at this meeting.

The resolution was adopted, and the committee appointed, as follows: Messrs. Peixotto of New York, Remington of Pennsylvania, Markoe of Massachusetts, Ebert of Illinois, and Baker of Virginia.

The Auditing Comittee reported having found the Treasurer's account correct, recommended an increase of his salary in the sum of $100, and proposed the appointment of a committee of five to devise means of meeting the increased expenditures. The last resolution was carried, and the previously proposed amendments to the By-Laws ordered to be referred to the same committee, consisting of the Auditing Committee, the Treasurer and the Permanent Secretary.

Prof. Markoe read a paper on **Oil of Myrcia acris**, which had been distilled by himself, and exhibited numerous specimens of the leaves, oil and products of the fractional distillation of the latter. The volatile oil is a mixture of a light and heavy oil, the latter being eugenic acid.

Prof. Bedford exhibited samples of wax to illustrate the process of bleaching, and a number of samples of white wax, variously adulterated, in illustration of a paper treating of the **Detection of Adulterations of White Wax.** The author suggests to keep on hand alcohol of specific gravity ·950 and ·970, in the former of which pure wax will always sink and in the latter float. Paraffin and ceresin are detected by not being carbonized on being warmed with sulphuric acid, and stearin by the formation of soap on being heated with a weak solution of sodium carbonate.

In a paper on **Hydrobromic Ether** Prof. Remington proposed its preparation by a modification of Personne's process: 6 parts of amorphous phosphorus are introduced into 33 parts of well cooled alcohol, 26 parts of bromine are added by drops, care being taken to avoid too great elevation of temperature; after setting aside for 24 hours, the mixture is distilled from a water bath, the distillate washed with a weak alkali, and rectified over chloride of calcium.

FIFTH SESSION, Thursday Afternoon, September 6.

The By-Laws were amended, increasing the Treasurer's salary to $500, after which the following papers were read:

On Eau de Cologne.—Mr. Wm. Saunders proposes the following formula as an imitation of Farina cologne water: Oil of neroli 5 drachms 20 minims, oil of bergamot 1 ounce, oil of rosemary 1 drachm 20 minims, extract of jasmin 1 ounce, pure alcohol 6 pints, water 2 pints; mix and filter. For a cheaper perfume its dilution to one-half with alcohol of the same strength is recommended. Dr. Squibb suggested the addition of some acetic ether, and Dr. Menninger stated that one ounce of it to the gallon of cologne water would render the latter more grateful.

On the use of Cassia Fistula in Confection of Senna.—Dr. A. W. Miller stated that the article could be readily obtained, but appeared to be unnecessary; a simplified formula was given, omitting the cassia fistula and increasing the tamarinds and prunes.

On Salicylic Acid.—Mr. R. V. Mattison gave an account of its occurrence, preparation, solubility and uses. Another paper by Mr. David Hays treated of the effect of salts which are used to increase the solubility of the acid in water, the conclusion being that a reaction takes place, at least a portion of the acid being converted into salt. Dr. Squibb stated that he had observed salicylic acid to be readily sublimable by means of steam heat, the contrary statements of European authorities notwithstanding, and that the sublimed acid is purer than the dialyzed and most of the salicylic acids purified by crystallization from liquids.

Prof. Bedford, on behalf of the Permanent Committee on the Pharmacopœia, made a verbal report and tendered the resignation of the committee, which was accepted. A communication from the California College of Pharmacy and Pharmaceutical Society, referring to the revision of the Pharmacopœia, was then read, laid upon the table, and afterwards referred to the new committee on the Pharmacopœia. The report of the committee on Dr. Hoffmann's resolution reported and proposed

That this Association appoint a committee on the revision of the U. S. Pharmacopœia, consisting of fifteen members, who shall be instructed to prepare, by a plan to be determined by themselves, the text of the proposed new Pharmacopœia; and that they report progress at each subsequent meeting, and finally lay before the Association at its meeting in 1879 a complete result of their labors.

The resolution was carried, and the following committee appointed: Charles Rice, Fred. Hoffmann and P. W. Bedford, of New York; J. M. Maisch, J. P. Remington and Chas. Bullock, of Philadelphia; G. F. H. Markoe and S. A. D. Sheppard, of Boston; J. F. Hancock, of Baltimore; A. E. Ebert, of Chicago; C. L. Diehl, of Louisville; E. S. Wayne, of Cincinnati; W. H. Crawford, of St. Louis; Chas. Mohr, of Mobile, and Emlen Painter, of San Francisco.

Mr. Gregory read a paper on **Emulsion of Almonds**, relating experiments with different mortars and varying manipulations. After blanching, the almonds should be reduced to a smooth paste by breaking them in a wedgewood mortar with a slightly flattened bottom, and of not less than 5 inches inside diameter for ½ oz. of almonds, and beating them, with the gradual addition of little water if the mass becomes dry or oily; when reduced to a paste, gum, sugar and other ingredients may be added gradually.

Dr. Pile read a paper on **Dialyzed Iron**, giving the result of some experiments and determining the specific gravity of a 5 per cent. solution to be 1·029.

A paper on **Resin of Podophyllum**, by F. B. Power, was read by the Secretary. On distillation with water a volatile fatty acid, probably myristic acid, was obtained. No alkaloid was found, but some protocatechuic acid which appears to pre-exist in the rhizome; the yellow coloring principle is altogether due to the acid portion of the resin. In commenting upon this valuable paper, Mr. Maisch stated that the bright yellow resin of podophyllum sometimes met with, is obtained by precipitation with alum, and contains an alumina compound; also, that the mother liquor of the precipitated resin sometimes—not always—gives to general tests indications of the presence of a little alkaloid.

SIXTH SESSION, Friday Forenoon, September 7.

The following papers were read:

On the use of Glycerin in Fluid Extracts.—Mr. J. U. Lloyd has found a decided advantage in the case of drugs containing much tannin. Other fluid extracts are mentioned in which glycerin is stated to be apparently not superior to water. Observations leading to these conclusions were not given.

On Official Fluid Extracts.—Mr. Lloyd is strongly in favor of cylindrical percolators, in which the powder should occupy at least 15 inches in height. A change in the menstruum of several fluid extracts is likewise advocated.

On Syrup of Iodide of Iron, Mr. L. M. Connor observed a syrup, the deep green color of which was discharged by dilute nitric acid; he concluded that it had been colored with anilin green. Mr. Maisch considered this insufficient proof for the conclusion.

On Resin of Scammony.—Prof. Markoe ascertained that washing with water removes but 2 per cent. of soluble matter; the alcoholic extract of scammony appears therefore to be practically identical with the resin.

On Cream of Tartar Supplied in Ontario.—Mr. Saunders found several samples, obtained from grocers, to be largely adulterated.

On Bonjean's Ergotin.—Mr G. Zellhoefer recommends to evaporate the infusion of 16 oz. of ground ergot made with cold distilled water to 4 fluidounces, and add to this 16 fluidounces of alcohol, specific gravity ·832; the filtrate evaporated yields 11·5 per cent. of ergotin.

On the Bromine Production of the United States.—Mr. H. S. Wellcome gave a brief history of this enterprise, and stated that the capacity of the various works at present is estimated by manufacturers at 3,000 pounds per day, while the actual production does not exceed 1,000 pounds.

On the Requisite Knowledge of Therapeutics by Pharmacists.—Mr. B. T. Fairchild argued that any culture in therapeutics or other collateral science cannot fail to add to the usefulness of the pharmacist, and render him by no means more prone to overstep the limits of his duties than he who has a low estimate of the requirements of pharmacy, and is therefore not likely to respect the province of medicine.

Mr. Shinn exhibited specimens of paraffin paper made in Philadelphia, and explained the uses to which it may be applied.

Prof. Markoe exhibited and explained Zentmayer's new students' or histological microscope; also a standard meter, liter and other appliances made by the American Metric Bureau to illustrate the decimal measures.

The report on the exhibition was read, and referred for publication. A resolution, offered by Mr. Wellcome, hereafter to discontinue the exhibitions, was referred to the Executive Committee for consideration and report at the next annual meeting.

An invitation from the Toronto Mechanics' Institute, placing the facilities of their reading room at the disposal of the members, was accepted with thanks.

The following pharmacists were elected honorary members: Prof. H. A. L. Wiggers, of Goettingen, Germany; Prof. G. Planchon, of Paris, France; Prof. Ed. Schaer, of Zurich, Switzerland, and Prof. X. Landerer, of Athens, Greece.

After the election of several new members, the proposition was made and laid over until next year, to amend Art. I of the Constitution by striking out the words, "the United States," and inserting in place thereof, "America."

Mr. A. J. Rankin, of Atlanta, Ga., was elected Local Secretary for the ensuing year.

Resolutious of thanks were passed to the Department of Education for the Province of Ontario; to the officers and members of the Ontario College of Pharmacy and their ladies; to the city government of Toronto; to the Local Secretary, Mr. H. J. Rose; to the reporters and the press, and to the citizens of Toronto. A number of speeches were made and toasts proposed, after which the Association adjourned to meet again at Atlanta, Ga., on the first Tuesday of September, 1878.

BRITISH PHARMACEUTICAL CONFERENCE OF 1877.

On Sunday, August 12th, a hundred men in perhaps a hundred places, were preparing for their visit to Plymouth, and during the whole of Monday the trains which arrived at that town brought thither numbers of visitors, some for the Conference, some for the British Association, and others for both. If anything were wanted to prove the general interest taken in pharmacy, both by pharmacists and some scientific chemists, it might perhaps have been found in the abandonment of pleasure by many who formed part of Tuesday and Wednesday meetings. There were present gentlemen from the far North, East, West and South, and even those who had been rambling during their annual holiday amid the wilds of Dartmoor and roving along the yet wilder and craggy coasts of Cornwall forsook those charming resorts for the sake of science.

By midnight on Monday small gatherings of visitors had assembled at all the chief hotels, and were to be seen seriously discussing the virtues of their tobacco and their glasses. And punctually at ten the next morning did the Conference summon its members to consider the report of the executive, and listen to the interesting address of the President, Professor Redwood.

This address consisted of a timely *résumé* of the history of the steps by which "the druggist of to-day has been transformed into the apothecary of the seventeenth century." Recognizing the existence of circumstances liable to induce fears that in the attempt to raise the *status* of the practice of pharmacy substantial advantages may be lost, and only barren honor gained, the President sought in the history

of the past a demonstration that the profit as well as the honor from such an occupation will mainly depend upon the qualifications of those following it to render valuable and efficient service to the public. In doing so he traced the rise of the barber surgeons and physicians, the origin of the apothecaries in the need of the physicians, and their subsequent antagonism to them, how a sense of the public requirements was too strong to allow of the restriction of the apothecaries to the mere dispensing of medicines, and how the apothecaries in their turn, having attained a higher position by virtue of their recognized utility to the public, became the assailants instead of the assailed. This led to the opposition of the chemists and druggists, organized in 1813, which left a mark upon the Apothecaries Act passed two years later, not without interest at the present time. Professor Redwood's address was listened to with deep attention, and will no doubt be read with much interest by many who were not present to hear it.

The first paper was a Report read by Dr. Wright, in the names of Mr. Groves, Mr. Williams, and himself, who constituted a committee, appointed at the last meeting to continue investigation upon the aconite alkaloids. It was pointed out that in past reports the existence of two well defined alkaloids in *A. Napellus* had been established, viz.: aconitine, $C_{33}H_{43}NO_{12}$, and picraconitine, $C_{31}H_{45}NO_{10}$, while from *Aconitum ferox* a third alkaloid had been isolated, expressed by the formula $C_{36}H_{49}NO_{11}$. The results which formed the chief features of the present communication illustrated the decompositions undergone by aconitine and pseudaconitine under influences resulting in the assimilation of water, for instance, treatment with dilute acids and alkalies. These decompositions Dr. Wright expressed as follows:

$$(1)\quad \underset{\text{Aconitine.}}{C_{33}H_{43}NO_{12}} + H_2O = \underset{\substack{\text{Benzoic.}\\ \text{Acid.}}}{C_7H_6O_2} + \underset{\text{Aconine.}}{C_{26}H_{39}NO_{11}}$$

$$(2)\quad \underset{\substack{\text{Pseud-}\\ \text{aconitine.}}}{C_{36}H_{49}NO_{11}} + H_2O = \underset{\substack{\text{Dimethyl-}\\ \text{protocate-}\\ \text{chuic acid.}}}{C_9H_{10}O_4} + \underset{\substack{\text{Pseud-}\\ \text{aconine.}}}{C_{27}H_{11}NO_8}$$

Among other matters treated of in this paper Dr. Wright detailed a method for assaying the commercial aconite alkaloids, which he claimed to yield approximately accurate results.

In the next paper, Dr. Paul and Mr. C. T. Kingzett described the alkaloid of Japanese aconite, which was shown to be different from anything described by Wright or other observers. A sample of the crystalline base was exhibited, the formula attributed to it being $C_{29}H_{43}NO_9$. The authors gave their reasons for believing that the various alkaloids which had been universally described and analyzed as alkaloids of aconite were probably salts of the bases in combination with an acid perhaps aconitic. In the course of the discussion following the reading of these two papers Mr. Kingzett criticized the analytical data submitted by Dr. Wright in his various reports on this subject.

"The Active Principle of Cayenne Pepper" was the title of the third paper, by Mr. J. C. Thresh. The author reported that he had found free palmitic acid to be a natural and predominating constituent of cayenne pepper fat, and further described capsaicin or the active principle which is obtained in small amount from cayenne pepper, and which has a formula near to $C_6H_{11}O_2$. In the discussion which followed the imperfectly known physiological action of capsaicin formed the chief topic.

The next communication was by Dr. Tilden "On the Essential Oils with special reference to the Hydrocarbons contained in them." In it were described the results of a further study by the author of the action of nitrosyl (NOCl) upon various terpenes of the formula $C_{10}H_{16}$, and upon other substances of the composition $C_{15}H_{24}$. The terpenes give compounds which yield on suitable treatment substitution products expressed by the formula $C_{10}H_{15}(NO)$, while the hydrocarbons $C_{15}H_{24}$ fail to show this character.

These results agree with those of Kingzett and Wright, who each by pursuing different lines of research have arrived at similar conclusions regarding these classes of bodies. Whereas, however, these chemists believe that only one cymene, $C_{10}H_{14}$, exists, and may be got from all the terpenes, Tilden believes that a number of isomeric cymenes exist, the only ground for this belief brought forward being the differences exhibited by different specimens in their rotatory power over light.

In the next paper, by Messrs. M. M. P. Muir and S. Sugiura, essential oil of sage was further described; also the terpenes which they have obtained from it and their action upon light, and the composition of certain camphor-like bodies contained in the essential oil.

Following this paper was one by Mr. R. H. Davies upon "The Constituents of the Ivy," although virtually the only one treated of by the author was hederic acid, a substance isolated originally by Posselt, and further described by Hartsens. In analyses made of this substance Mr. Davies had experienced a difficulty in combustion, although as a matter of fact, it may be remarked that when heated on platinum foil alone, it burns away quite easily and entirely, leaving not a trace of charcoal. Mr. Davies arrived at a higher percentage of carbon for the substance than did Posselt, whose analyses led to the formula $C_{15}H_{24}O_4$ while those of Mr. Davies give $C_{16}H_{26}O_4$. A nitro compound $C_{16}H_{25}(NO_2)O_4$ was also described, but attempts to prepare certain salts proved futile. This might have been expected of a substance having the character of a glucoside as predicted last year by Mr. Kingzett, who now followed Mr. Davies with a note on hederic acid.

In this communication Mr. Kingzett described the means whereby, following up his own suggestion as to the nature of this substance, he had isolated glucose from hederic acid, and had obtained a barium salt of the same, the analysis of which was described. Mr. Kingzett explained that this research formed part of a broader investigation, the first part of which had been communicated to the Chemical Society recently by Dr. Hake and himself, and he regarded the production of sugar from hederic acid as one proof of the correctness of his theory described in that paper.

Mr. J. Eliot Howard was the author of the next paper "On the Supply of Cinchona Bark, as connected with the present price of Quinine." The discussion which ensued was perhaps as interesting as the paper itself, the points which were elicited being as follows: Although it would be attended with some advantages to use other cinchona alkaloids than quinine for at least some purposes, yet the medical evidence available is far from satisfactory as regards the specific action of any of the other alkaloids except quinine. More satisfactory evidence of the kind must therefore be obtained before the commercial develpoment of cinchonidine, etc., can be attempted on a large scale.

In his "Supplementary Note on the Assay of Opium," Mr. B. S. Proctor described certain improvements he had introduced into the method described at the last Conference meeting. In refeience to this method it is questionable whether the extraction of opium by percolation satisfies the requirements of commercial analysis. It may also be pointed out that in washing morphia when separated from the other alkaloids, no fixed standard of the amount thus dissolved can be depended upon, varying as it does not only with other conditions but notably according to the influence of certain very soluble bodies in causing other bodies by themselves insoluble to pass into solution.

Mr. W. W. Stoddart's "Notes on an Impurity in Oxide of Zinc," were directed to the presence of sulphite of zinc, and in the disscussion which followed various explanations were offered, the most plausible one being that the sample in question had been made by ignition of the sulphate which constitutes to some extent a waste product of the autogenous soldering process.

Dr. Symes then read a paper on "Sugar in Pharmacy," in which he described the various sugars to be found in commerce, their degree of purity and impurity, their inversion by acids, and their general use in pharmacy. In particular he showed that the syrups of saffron and roses could be readily prepared by making concentrated infusions and filtering upon granulated sugar contained in a hot water bath, with frequent stirrings till dry.

The meeting on Tuesday concluded with a paper by Mr. A. W. Gerrard, in which he described experiments leading him to the conclusion that *Narcissus Pseudo-Narcissus* contained an alkaloid and certain other principles of interest. He had not obtained any product in a state of purity, nor were any analyses forthcoming or other evidences of identity.

The Conference meeting of Wednesday opened with an interesting paper by Mr. E. Smith, on the "Materia Medica of Devon." This, of course, included a sketch of the botany of the county, and an account of the large copper, iron, manganese, arsenic and other mining industries which are so actively prosecuted. Mr. Smith, however, did not allude to the diminution of pyrites and manganese mining brought about since the large importation of these minerals first commenced.

The second paper on Wednesday's list was by Mr. G. F. Schacht, who related "Some Experiences in the Equipment and Working of a small Pharmaceutical Laboratory." The paper was illustrated by some excellent drawings by Mr. J. T. Thompson, and gave rise to a conversation in which many gentlemen took part, and gave other personal experiences as to the best form of several pieces of laboratory apparatus and appliances.

Mr. W. H. Martin's "Note on Diphenylamine as a Test for Nitric and Nitrous Acids," was illustrative of the observations made previously by Professor Lunge, recently published. The test appears to be an exceedingly delicate one. In applying it a small granule of diphenylamine is placed in a test-tube, and a drop or two of sulphuric acid added, then water so as to increase the temperature in order to effect a perfect solution of the diphenylamine. If to such a prepaied test solution sulphuric acid be added containing only a trace of nitric or nitrous acid a beautiful permanent blue color is immediately produced at the junction of the liquids.

A paper by Mr. J. C. Thresh on "The Pill Masses of the B. P." contained a report on those which in his opinion are of inconvenient consistence or become so by keeping, and suggestions for their improvement.

After this, a paper by Dr. Tilden was read upon "A Product of the Oxidation of Barbaloin and Socaloin," which he has named alloxanthin, constituting a yellow coloring matter closely related to chrysammic acid and to emodin.

It had been determined at the meeting of the previous day that Mr. S. R. Atkins' paper "On a Point in Pharmaceutical Ethics" should be read without being subjected to discussion. This course was, however, protested against by Mr. Guyer, as forming an undesirable precedent, but the protest was overruled. In the paper Mr. Atkins defined the specific positions occupied by pharmacists and medical men, and showed that it was quite feasible to decide the hotly disputed matter of counter practice without evincing bad spirit and acrimony. He contended that pharmacists had a public justification for counter practice in simple complaints, but warned them against carrying it to an unjustifiable degree.

This paper was followed by one relating to a question which not only affects a large trading interest, but is also one of importance as regards the public health. The paper in question was intended to elucidate the influence exercised by the presence of metallic compounds in alimentary substances. It was chiefly occupied with the results of an investigation by Dr. Paul and Mr. Kingzett into the physiological action of the copper known to be contained in preserved peas, particularly those of French manufacture, and it was shown by the authors that the copper as it exists in the peas is not only in an insoluble state and in actual combination with the albuminous constituents of the peas, but is not removed by the water used in the process of cooking. During digestion this copper passes entirely into solution if sufficient time be allowed; nevertheless it is for the most part excreted in the fæces, being probably reprecipitated through the agency ot biliary fluid as phosphate. Only a very minute trace, therefore, is absorbed into the system, thus proving the non-injurious nature of such peas as an article of food. It was also shown that many compounds used largely in coloring confectionery contain from 6 to 70 per cent. of stannic oxide; besides which other articles of food containing metallic compounds were described. In the discussion which followed Dr. Wright called attention to some instances of poisoning through the agency of lead, tin and zinc, which had been reported in the daily papers. Dr. Redwood stated that, in his opinion, the vendors of preserved peas containing copper should be prosecuted on the ground that they were selling an article of food containing something not natural to the peas, but intentionally introduced. To this it was replied that persons who consumed such peas would not suffer the slightest injury to health, a conclusion which received considerable support from evidence given in the discussion by various speakers. It was particularly insisted upon by the authors that medical opinion, no matter how unanimous, was worthless, so long as that opinion was based upon an imperfect knowledge of the facts necessary for its formation.

The "Analyses of Preserved Carrots, Potatoes, Cabbage and Mixed Vegetables," detailed by Professor Attfield in the next paper, have been for the most part previously published in the report of the Commission appointed to inquire into the causes of the outbreak of scurvy on the Arctic Expedition.

Mr. Kingzett next read a paper on "Scammony Root," by Mr. Farries and himself, in which it was shown that the roots of *Convolvulus scammonia* contain no alkaloid, although it has been asserted by Marquart that an alkaloid does exist in the root. Resin of scammony yields glucose on decomposition with dilute sulphuric acid and by various other processes given in the paper, an analysis of barium glucinate being brought forward in support. Mention was also made of the volatile oil produced below 90° C. by dry distillation of the resin; its examination is not completed.

In a "Further Note on the History of Tea Hair," Mr. T. Greenish showed that the hair contains no thein and gave a general description of their occurrence and properties.

Mr. L. Siebold's paper on "Copaiba Testing" showed that beyond fatty oils, such as linseed, turpentine oil was the only other probable adulterant. He also pointed out that the methods of testing still given in many books are valueless. He had found that Dr. Muter's process for testing copaiba also was unreliable, while the simple process of evaporating to dryness was sufficient to yield indications of purity or impurity, according to the stickiness or dry nature of the product. Turpentine could be easily detected when present, in the first portions obtained on the distillation of copaiba oil, and recognized by its lower boiling point and odor.

Mr. Moss stated in the discussion that as regards Flückiger's test for the purity of copaiba oil, he had never experienced any difficulty in the use of it. Mr. W.W. Urwick's "new medicinal solution of phosphorus" consists of a preparation in which egg albumen is employed, and Dr. Redwood pointed out that he had already given a formula in which that substance was used for the purpose stated.

Mr. Kingzett's paper on "Blood Albumen" contained a detailed account of the process patented by Mr. Zingler and himself for bleaching and preserving blood albumen, and the various uses of the product. The process consists in passing a current of air through albumen solution admixed with a certain small percentage of turpentine, and maintained at about 40° C. The oil oxidizes, forming peroxide of hydrogen, which effects the bleaching, while the camphoric acid and other substances simultaneously produced preserve the solutions of albumen almost permanently from any putrescible or other change.

In his next paper on "Pilocarpine" Mr. Kingzett gave the analysis of a platinum salt made from a sample of the nitrate given to him by Professor Attfield, which proved the identity of the alkaloid with that to which he had previously assigned the formula $C_{23}H_{34}N_4O_4$. On distillation of the salt $C_{23}H_{34}N_4O_4$, 2HCl, $PtCl_4$ to dryness with strong caustic soda solution, trimethylamine appears to be produced.

The last paper read was by Mr. Willmott on the "Effects of Variations of Temperature on Boiled Putrescible Liquids."

It was then determined to hold the next annual meeting of the Conference at Dublin, and after the usual business matters had been concluded, including the appointment of a new President in the person of Mr. G. Schacht, the Conference dissolved.

On Thursday, notwithstanding a smart shower just before the time fixed for embarkation, a considerable number of ladies and gentlemen accepted the invitation of the Local Committee to join in an excursion up the River Tamar. The

programme, as previously sketched out, was closely followed. The boat proceeded up the river as far as Cotehele, the grounds of which were visited, then returned to Pentillie where an ample lunch was followed by a stroll through grounds, from which a magnificent view including the windings of the river was obtained. The kindness of Col. Corydon in throwing open the grounds was recognized in three hearty cheers given by the company. After the company had once more returned on board, the "Eleanor" proceeded on her course down the river to Mount Edgcumbe, where some landed whilst others went on for a run to the breakwater. By a little after six o'clock, however, the company had once more reunited in the "orangery," where, within view of numerous splendid specimens of the genus *Citrus*, bearing fruit and flowers in the open air, and within hearing of the musical strains of the capital band of the Royal Marines, "high tea" was served. Then, at the conclusion of a most successful day, the threatening clouds of the morning having soon dispersed, the President, Professor Redwood, speaking on behalf of the visitors, acknowledged the kindness and hospitality of the Local Committee, and also their appreciation of the generosity of the Earl of Mount Edgcumbe, which had allowed them to view his magnificent seat.

In concluding this notice it may be said that from the beginning to the end of the Conference meeting there was ample evidence that not effort had been spared to secure the comfort and enjoyment of the visitors, and there can be no doubt that in the manifest appreciation of this fact Messrs. Clark, Skinner, Turney, Codd, Balkwell, and the other members of the Local Committee will find the most grateful acknowledgment of their labors.—*Phar. Jour. and Trans.*, August 18, 1877.

EDITORIAL DEPARTMENT.

The Exhibition at Toronto in connection with the twenty-fifth annual meeting of the American Pharmaceutical Association was less extensive than at former meetings; but when it is considered that nearly all the goods had been sent from the United States, and that the trouble attending the exportation and subsequent re-importation had doubtless prevented exhibitors from sending goods, the display was very creditable and did not lack in variety.

Crude drugs were represented by cinchonas from Powers & Weightman; recently introduced drugs, like Eucalyptus, Coca, etc., from McKesson & Robbins, and a large number of herbs and flowers, both loose and pressed, from B. O. & G. C. Wilson, of Boston.

Chemicals—A very handsome and extensive collection of cinchona and opium products, mercurials, scale preparations, sulphocarbolates, etc., was tastefully arranged by Powers & Weightman, of Philadelphia. A collection of chemicals by Chas. T. White and Co., of New York, was unfortunately delayed in transportation. Chas. Bullock exhibited the results of his investigation of veratrum viride, consisting of jervia and its salts, two resins and fixed oil. McKesson & Robbins had sent about fifty samples of rare chemicals.

Pharmaceuticals.—Pills, coated with gelatin and with sugar and compressed, were shown by McKesson & Robbins and by W. H. Schieffelin & Co., of New York, and Wm. R. Warner and John Wyeth & Bro., Philadelphia; saccharated pepsin, by E. Scheffer, Louisville, and Lazell, Marsh & Gardiner, New York; perfume extracts, by the last-named firm and by McKesson & Robbins; extracts, and more particularly fluid extracts, by the two firms mentioned and by Wm. Saunders; vol-

atile oils, by McKesson & Robbins; plasters, by Seabury & Johnson, New York; bougies, by Allan & Co., Buffalo; nitrite of amyl pearls and iodoform crayons, by F. A. Reichardt, New York; liquorice, of their own manufacture, by Mellor & Rittenhouse, Philadelphia.

Appliances and Miscellaneous.—Dispensing and counter scales were on exhibition from Hy. Troemner, Philadelphia; wafer press and wafers from Neidlinger & Co., New York; show cases from F. A. Howell, New York, and W. Millichamp, Toronto; Messten's microscopes, by Fr. Hoffmann, New York; native wines, by H. K. Thurber, New York; Saratoga mineral waters, by Gates & Bro., Saratoga; a soap-cutting machine, by Van Buest & Co., New Albany.

OBITUARY.

Hugh Algernon Weddell, M.D., died at Poitiers, France, July 22, at the age of 58 years. The deceased was well known as the author of many botanical memoirs, among which the most celebrated is his illustrated *Histoire naturelle des Quinquinas*, which was published by Riocreux et Steinheil, at Paris, in 1849. The work was the fruit of personal observations made on a journey to Southern Peru and Bolivia, after he had been exploring for two years, since 1843, some of the interior provinces of Brazil and a portion of Peru, in company with M. de Castelnau. Besides other species, he discovered, in 1847, *Cinchona Calisaya* and several of its varieties, and recognized in it the source of Calisaya bark which had then been known in Europe for about 60 years. He strongly advocated to attempt the cultivation of the cinchonas, which is now successfully carried on in the East Indies, and also directed attention to the importance of the microscopical investigation of the histological relations of the cinchona barks, which has since led to such important results through the observations of Schleiden, Berg, John Eliot Howard and others. In 1870, Weddell published *Notes sur les Quinquinas*, in which he reviewed the botany of that genus and arranged the 33 species into 5 "stirps." Recently he interested himself in favor of the more extended use of the cheaper cinchona alkaloids in place of quinia.

The deceased was a member of numerous scientific bodies, and the Philadelphia College of Pharmacy loses in him one of its honorary members.

George Wansey Andrews died in Baltimore September 12th, at the ripe age of 76 years. He was born and educated in that city, commenced business on his own account in 1829, was afterwards for thirty years a member of the firm of Andrews & Thompson, and retired from active business in 1871. He was one of the founders, and, for many years, president of the Maryland College of Pharmacy. Though not present at the organization of the American Pharmaceutical Association in 1852, the convention paid him the compliment of electing him First Vice President, and in 1856-57 he served as President of the Association. He had been a member of the Maryland Academy of Sciences for over fifty years, and during his long life enjoyed and retained the reputation of reliability and scientific attainments as a pharmacist, activity and correctnees in his business relations, and of being a good and useful man and citizen.

Gustavus Krause was born September 19th, 1822, at Cüstrin, Prussia, served his apprenticeship with his brother at Schönhaide, Saxony, and completed his pharmaceutical education at Berl n. He left Germany for political reasons, and after residing in France for about twelve years came to this country about twenty years ago, and soon afterwards entered the establishment of Samuel Simes, corner of Twelfth and Chestnut sts., Philadelphia, of which he subsequently became owner, until, after a long illness, he died Sept. 25th, aged 55 years. The deceased was a member of the Philadelphia College of Pharmacy.

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IRON AND ITS CONSTITUENTS IN REGARD TO PHARMACEUTIC PREPARATIONS.

By Henry G. Debrunner, Chemist.

It may be deemed excusable for a Pittsburgher to entertain a very high opinion of iron, and if a Pittsburgh chemist particularly dwells on this subject it can hardly be taken amiss. When we consider that this element is one of the chief constituents of the earth's solid crust, varying in quantities from two to ten per cent. in the primary rocks, besides its general presence throughout the animal and vegetable kingdoms, a closer examination of its character will be justifiable. The manifold useful applications of iron in the arts and manufactures, its occurrence in numerous ores and minerals, in the green pigment of plants and the red one of blood; its presence even in the sun and the far distant fixed stars, where it has been detected by aid of the spectroscope, render it an article of universal interest.

When making ferruginous preparations, which are used in considerable quantities on account of their great therapeutic value, it is the aim of the pharmacist to procure the purest iron in the market. Chemically pure iron (Fe) is not an ordinary commercial article. The finest Pittsburgh tool steel, which fully equals, if not surpasses, the best of Sheffield make, contains, besides combined carbon, 0·05 per cent. of silicon, 0·008 per cent. of phosphorus, 0·006 per cent. of sulphur, 0·1 to 0·2 per cent. of manganese, and minute traces of various other elements, while cast iron contains from 88 to 97 per cent. of pure Fe and a high percentage of manganese.

The Pharmacopœia recommends iron wire as material for iron preparations; musical wire, being steel and therefore purer, is also often applied and will yield sufficiently pure preparations. Their analyses are as follows:

	Iron wire.	Musical (steel) wire.
Carbon,	0·2730 per cent.	0·5320 per cent.
Silicon,	0·1418	0·0700
Phosphorus,	0·0809	0·0427
Sulphur,	0·0610	0·0182
Manganese,	0·7027	0·0600
Copper, trace.		
Iron (Fe),	98·7406	99·2771
	100·0000	100·000

(Quantity taken for analysis, 20 grams.)

The material I would recommend is soft steel drillings, they being cheaper, purer and not so difficult to dissolve as wire, which by the different mechanical processes of forging, hammering, rolling and final drawing has become denser and harder. The more impure an iron the quicker it will dissolve, but the same piece of iron or steel will more rapidly dissolve the less it has undergone the above-mentioned mechanical treatments. If we consider the immense amount of mechanical labor to which an iron or steel bar is subjected until its diameter is reduced to that of wire, it is evident that soft steel drillings, shavings or turnings deserve preference. Axles and steel boiler plate, of which turnings and drilling can easily be obtained at any steel work or machine shop, rank among the purest brands of iron, in the chemical sense of the word. Their composition is shown by the following analysis:

	Axle.	Boiler plate.
Carbon, combined,	0·2700 per cent.	0·3010 per cent.
Silicon,	0·0800	0·0492
Phosphorus,	0·0382	0·0298
Sulphur,	0·0157	0·0163
Manganese,	0·0747	0·0643
Iron (Fe),	99·5214	99·5394
	100·0000	100·0000

(Quantity taken for analysis, 20 grams.)

It may be considered a practical rule that any brand of steel that will make good axle or boiler plate will also yield pure preparations on dissolving.

Let us examine, now, what becomes of the different constituents of iron on dissolving it in different acids.

If iron is acted on by hydrochloric acid the following reaction will take place: $Fe+2HCl=FeCl_2+H_2$. Combined carbon is chiefly carried off in the form of a hydrocarbon, while the entire graphitic

portion is left in the black insoluble residue. Iron phosphide is similarly decomposed, particularly on heating the solution, forming phosphoretted hydrogen. Silicon partially may undergo the same reaction, the larger quantity of this element, however, will be found in the black carbonaceous residue. Sulphur, if not combined with copper and arsenic, will be entirely eliminated as gaseous combinations, while manganese and iron remain in solution as chlorides. If copper is present among the impurities of iron, it will combine with the sulphur, forming copper sulphide, which will be found in the insoluble residue. Silicic acid from slag particles, pre-existing in the material used, may be detected in minute quantities, on oxidation and evaporation of the resulting solution to dryness, etc. If steel has been used, slag particles are absent. It is evident that from a pure iron these impurities are of no significance; when, however, pig iron or other impure brands are used, they may cause precipitates in a concentrated solution. Drillings of soft steel, containing 99 per cent. of iron (Fe), combine at the same time convenient shape with the highest practical purity. I have often had samples which dissolved perfectly in dilute hydrochloric acid without the application of heat. The product of this reaction is an aqueous solution of ferrous chloride, Fe_2Cl_4, which is filtered, and finally converted into ferric chloride, Fe_2Cl_6, by the addition of the necessary quantities of hydrochloric and nitric acids, when the following exchange of molecules will take place: $Fe_2Cl_4+2HCl+2HNO_3=Fe_2Cl_6+2NO_2+2H_2O$.

The action of sulphuric acid on iron is similar to the foregoing, most of the impurities being carried off as gaseous combinations, while the graphitic carbon is left as a black insoluble residue, together with some silicon. Highly concentrated sulphuric acid hardly acts on iron in the cold; but on heating sulphurous anhydrid, SO_2 is formed, while the dilute acid rapidly dissolves it to ferrous sulphate, liberating hydrogen.

The behavior of iron to nitric acid is essentially dependent on the concentration of the latter. Highly concentrated aqua fortis converts iron into its passive state, thus preventing any further reaction. When in this peculiar modification it will neither be acted on by weaker acid, unless touched with another clean piece of metallic iron, when liquefaction and evolution of gas will begin at once. Medium strong acid, of about 1·25 specific gravity, forms ferric nitrate, $Fe_2N_6O_{18}$, on evolution of nitric oxide, NO, which, in contact with atmospheric

air, is oxydized to hypo-nitric anhydrid, N_2O_4, forming red fumes. Very dilute nitric acid, finally, when acting on iron in the cold, transforms it into ferrous nitrate, $Fe(NO_3)_2$, forming at the same time ammonic nitrate by the action of nascent hydrogen on nitric oxide, NO, in presence of nitric acid. The latter gas (NO), if absorbed by the ferrous solution, produces a black coloration of the same. The formation of ammonic nitrate takes place in accordance with the following equation:

$$\underset{\text{Nitric oxide.}}{NO} + \underset{\text{Hydrogen.}}{5H} + \underset{\text{Nitric acid.}}{HNO_3} = \underset{\text{Water.}}{H_2O} + \underset{\text{Ammonic nitrate.}}{NH_4NO_3}$$

The lower the temperature during this process, the larger the quantity of ammonic nitrate formed. The different chemical processes which take place when iron is acted on by very dilute nitric acid are illustrated by the following scheme of equations:

$$a. \quad \underset{\text{Iron.}}{Fe} + \underset{\text{Nitric acid.}}{2HNO_3} = \underset{\text{Ferrous nitrate.}}{Fe(NO_3)_2} + \underset{\text{Hydrogen.}}{H_2}$$

$$b. \quad \underset{\text{Iron.}}{Fe} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\text{Ferrous nitrate.}}{3Fe(NO_3)_2} + \underset{\text{Water.}}{4H_2O} + \underset{\text{Nitric oxide.}}{2NO}$$

These two reactions take place at the same time and are followed by the formation of ammonic nitrate above alluded to. On adding five times the equation *a* to *b*, in the presence of an excess of $2HNO_3$, we obtain

$$\underset{\text{Iron.}}{8Fe} + \underset{\text{Nitric acid.}}{20HNO_3} = \underset{\text{Ferrous nitrate.}}{8Fe(NO_3)_2} + \underset{\text{Water.}}{6H_2O} + \underset{\text{Ammonic nitrate.}}{2NH_4NO_3}$$

thus expressing the different chemical reactions in one equation.

The nature of the reddish-brown flocculent body which is formed from the combined carbon is not yet sufficiently investigated. Its ability of producing lighter and darker colorations of the ferric solution, proportionately to its quantity, forms the basis of Eggertz's colorimetric method for its estimation in steel. The results agree to 0·02 per cent. with those obtained by combustion analysis.

On dissolving iron by means of iodine, the total quantity of carbon remains in the residue, the resulting solution containing but the iodides of the metallic elements, viz.: ferrous and manganous iodide, the latter in minute quantity. An excess of iodine, however, will also oxidize the non-metallic impurities, as phosphorus, sulphur, etc., by decomposing water and with the formation of hydriodic acid, HI. For the preparation of pure ferric iodide, Fe_2I_6, it is therefore essential to filter the solution of the green ferrous salt, Fe_2I_4, before adding a further quantity

of iodine. As to the carbonaceous residue, it may be stated that it contains chemically combined iodine, and was found by Eggertz to have the following composition, when dried at 212°F.

Carbon, C, ...	59·69 per cent.
Water, H_2O, ...	22·50
Iodine, I, ...	16·00

leaving, on ignition, some siliceous ash.

It is really interesting to observe what an important influence carbon exerts upon the metal iron, the commercial brands of which should be, scientifically, called carburets of iron. "Spiegeleisen," a white crystallized and highly manganiferous cast iron, which is used in large quantities in the Bessemer process, corresponds to the formula Fe_4C_c; it contains its total carbon (about 5 per cent.) in combined condition. In grey pig, the larger portion of this element exists in the graphitic modification, sometimes approximately corresponding to the formula $Fe_8C_c + C_{gr}$. Among the numerous interesting phenomena which these combinations exhibit, I cannot help to mention one which, although being very frequently observed, still lacks a sufficient explanation of its causes. I refer to the process of hardening steel, as practised daily by every blacksmith. If a piece of steel at red heat is dipped into cold water an entire change of its structure takes place; its grain becomes finer and denser, its tensile strength almost double to what it was before, while its hardness nearly reaches that of diamond. Acids will hardly attack it in this state, no edge tool will produce an impression on the bar, which before being subjected to this simple treatment, easily could be drilled or filed. These facts become still more interesting if we know that at the same time the volume of the bar has become larger and its specific gravity decreased. Salt water or mercury will produce a still higher degree of hardness and a larger expansion of the hardened bar, while a soap solution has no hardening effect on steel. None of these phenomena will take place in iron free from carbon, while hardness and tensile strength will proportionately increase with the latter, reaching their "practical maximum" at 1·2 per cent. combined C. This can by no means be called a mere physical change, but seems to be the result of a chemical reaction between the iron and its other constituents. I have previously mentioned that on dissolving iron in hydrochloric acid the combined carbon is carried off as carburetted hydrogen. If, for instance, the gases that form, on treatment of

"Spiegeleisen" with the above acid, are allowed to pass through alcohol or concentrated sulphuric acid, part of them will be absorbed, and may be separated again, on dilution with water, in the form of an oily liquid which is colorless, possesses a strong, rather disagreeable smell, and consists chiefly of the hydrocarbons of the ethylen series, $C_n H_{2n}$. Besides these combinations, the characteristic group $C_{10}H_{16}$ of the volatile oils has also been found to be an admixture of the hydrogen gas liberated in this process. Resinous bodies, very probably products of decomposition of the foregoing compounds, are found in the carbonaceous or siliceous residue on dissolving, and may be extracted by ether or caustic alkalies. Sulphur and phosphorus also give rise to the formation of organic compounds containing these elements.

That the investigation of inorganic bodies may sometimes yield results allowing conclusions on the most complicated organic and physiological processes may be fairly illustrated by the following instance: As many physiologists admit the carbon, isolated from carbonic acid by the green parts of plants, under the influence of solar light, to be able, in its nascent state, to unite with water, forming a carbo-hydrate, it would be a strong support of this theory if a carbo-hydrate could be formed synthetically in the indicated manner and at a low temperature. That this primordial hydrate may form the basis of the numerous other compounds, elaborated by plants on ulterior transformation, is far easier to believe than the above hypothesis, without any experimental support. P. Schützenberger and A. Bourgois first expressed this idea in their "Researches on the Carbon in White Cast Iron," and succeeded in forming a compound, to which they gave the formula $C_{22}3H_2O$. It can be constantly obtained by treating Spiegeleisen, Fe_4C, with a cold solution of cupric chloride, when the following reaction will take place: $Fe_4C+4CuCl_2=4FeCl_2+C+Cu_4$. The carbonaceous residue of copper is then treated with cold ferric chloride, to which some hydrochloric acid has been added. Copper will rapidly dissolve, leaving a brownish-black but little bulky residue, which, dried at 212° F., corresponds to the above-mentioned formula, $C_{22}H_6O_3=C_{22}3H_2O$.

May I be allowed to conclude this paper with a few remarks on ferrum dialysatum and its analysis. The demand for this new preparalion, which doubtless will take the place of most of the other ferruginous compounds, chiefly on account of its almost entire tastelessness,

is continually increasing. A sample, which I prepared according to one of the methods lately published in this journal, gave on analysis:

Ferric oxide, Fe_2O_3,	4·02	} 4.71 per cent.
Ferric chloride, Fe_2Cl_6,	0·69	
Water, H_2O,	95·29	
	100·00	

(Chlorine = 0·45 per cent. combined with 0.24 per cent. iron to form 0 69 per cent. Fe_2Cl_6.)

It possessed all the characteristic properties of the commercial article, leaving on evaporation in the water bath 5·03 per cent. of hydrated ferric oxychloride. The approximate chemical formula derived from the above analysis lets it appear as an aqueous solution of $Fe_2Cl_6 + 12Fe_2O_3$ or $Fe_{26}O_{36}Cl_6$. In order to obtain a very basic oxychloride I consider it necessary to keep the solution to be dialysed, during precipitation, or addition of the separately precipitated and washed ferric oxyhydrate, at as low a temperature as possible. Heating in an open vessel, as well as in hermetically sealed glass tubes, under pressure, will produce a precipitate insoluble on subsequent dialysis.

In order to test the percentage strength of dialysed iron, without evaporating a weighed quantity to dryness or determining ferric oxide and chlorine by weight or volumetric analysis, I wou'd propose the following colorimetric method, which will give quite satisfactory results, particularly if applied to products that have been prepared by exactly the same process. Having obtained a clear, tasteless, dard-red solution, which will not precipitate on addition of silver nitrate,[1] it is removed from the dialyser, and compared with a standard solution of known strength, which has been determined by careful weight analysis. The modus operandi is as follows:

a. The standard solution consists of 10 cc. of dialysed iron (5 per cent.), diluted with distilled water of 60°F. to the volume of 200 cc. Twenty cc. of this solution are then introduced into a true cylindrical tube of 50 to 60 cc. capacity, graduated into 0·1 cc. In order to make the

β. Colometric comparison, 2 cc. of the solution to be tested are put into a similar tube of exactly the same dimensions, and diluted with distilled water until its shade is exactly the same as that of the stand-

[1] On addition of silver nitrate I have observed dichroism of said solution. It appears turbid in the reflected, but perfectly clear in transparent light.

ard. To produce a perfect mixture, the tube is shaken after every addition of water. If the standard solution has been prepared from dialysed iron, leaving exactly 5 cc. of residue on evaporation on the water bath, every cc. of the diluted solution of the sample to be compared will correspond to $\frac{1}{4}$ per cent. of residue of the original sample, and its volume expressed in cc., when of equal shade with the standard, divided by four, will give the percentage strength desired.

I have compared results of this colorimetric method with those of weight and volumetric analysis, and find it correct to 0·05 per cent. In the following I will give a few examples to illustrate the method proposed:

Standard: $\frac{20 \text{ cc.}}{4} = 5$ per cent. residue.

1. Sample compared was to be diluted to 18 cc. to equal shade of standard. $\frac{18 \text{ cc.}}{4} = 4\frac{1}{2}$ per cent. residue.

2. Sample compared was to be diluted to 23 cc. to equal shade of standard. $\frac{23 \text{ cc.}}{4} = 5\frac{3}{4}$ per cent. residue.

From these data, we easily can calculate to what volume any quantity of dialysed iron is to be evaporated or diluted to obtain the desired strength of 5 per cent.[1] As this mode of analysis only requires a few moments time, being at the same time sufficiently correct for practical purposes, it may be preferable to that of evaporation.

Black Diamond Steel Works,
Pittsburgh, Oct. 6, 1877.

ESTIMATION OF QUINIA.

By Henry Trimble, Ph.G.

Read at the Pharmaceutical Meeting, October 16, 1877.

For the ready estimation of quinia, for example in pills, and in many cases in which the quantity that should be present is approximately known, I have devised and used the following method, which is based

[1] As to the necessary glass tubes, I would recommend the same as used in the laboratories of steel works for colorimetric carbon determinations, viz.: Two true cylindrical tubes, closed at one end; capacity 50 to 60 cc., graduated into 0·1 cc., internal diameter about three-eighths of an inch; both exactly of the same dimensions and of best white glass.

on the intensity of color produced when the alkaloid is treated with chlorine water and solution of ammonia.

First a standard solution is prepared by taking one centigram of quinia or one of its salts, dissolving it in about five cc. of fresh chlorine water, adding ten cc. of solution of ammonia, and diluting this dark-green liquid in a glass cylinder to 100 cc.

In estimating a one-grain quinia pill, for example, a similar cylinder is taken, into which is placed a fractional part of the solution obtained by treating the disintegrated pill with chlorine water and ammonia, and diluting with water until it exactly corresponds in color with the standard solution; then by a little calculation the amount of quinia is known. By a little practice the results become surprisingly accurate, and the process requires very little time compared with the more exact gravimetric methods. It is true that quinidia if present interferes with the results, but it is not so liable to be fraudulently employed as the cheaper alkaloids.

To what extent this process may be employed for the estimation of quinia and quinidia in bark I am not prepared to say, but think that, with certain precautions, it might admit of application for this purpose. The same principle is extensively used in determining the amount of carbon in iron and steel, with very satisfactory results.

The PREPARATION of CONCENTRATED NITRIC ACID.

By Henry Trimble, Ph.G.

Read at the Social Alumni Meeting, October 4, 1877.

Although this acid is rarely used in pharmaceutical laboratories of greater strength than the Pharmacopœia standard, yet occasionally that of the specific gravity 1·5 is found convenient, and in some operations absolutely necessary.

All the authorities which I have consulted on the subject, recommend it to be prepared by heating in a retort equal parts of potassium nitrate and sulphuric acid. This process requires a high heat, constant attention, and is very liable to terminate in fracture of the retort. The following method, I understand, is employed in some of the German laboratories, and, having tried it a great many times myself, I think it should be recommended, supposing that commercial nitric acid is as readily procured as potassium nitrate.

One part of commercial nitric acid is placed in a retort, to which has been closely attached a suitable receiver, and two parts of strong sulphuric acid added. The whole is placed on a wire gauze, over a Bunsen burner flame, not larger than that of an ordinary candle. In about eight or ten hours all the nitric acid will have distilled over, leaving the sulphuric acid in the retort, which, though slightly diluted by the water absorbed, may be used in a variety of ways.

The operation requires very little attention, and the resulting bright-yellow nitric acid is extremely active on many substances, but, being liable to slight decomposition, is better prepared only when wanted for immediate use.

HOP CULTURE IN NEW YORK.

By Emery Gilbert Bissell, Ph.G.

(*From an Inaugural Essay.*)

Hop culture in the United States was commenced in Virginia about 250 years ago, and in 1657 the industry was encouraged by legislative enactments. The culture of the crop in that State was not a success, the quality produced being far inferior to that of the old world. After the failure to produce a good quality in Virginia little attention was paid to the growing of hops in this country until within the last seventy-five years, and the most we can learn from census reports is that they have been grown, more or less, in nearly every State and Territory in the Union—Florida, Dakota and New Mexico being the only exceptions. It is within the past thirty-five years that hops have assumed their present commercial and agricultural importance in the United States, and during that time the culture has increased at a surprising rate, while in England and Germany the increase has been very slight during the past seventy-five years. Some idea may be formed of the growth and importance of this interest in the United States from the following statistics, taken from the census reports, which, allowing 200 pounds to the bale, show that there were produced in this country in 1840 6,196 bales; 1850, 17,485 bales; 1860, 54,960 bales; 1870, 127,283 bales. Thus far New York has led all other States in this branch of agriculture; probably at least four-fifths of all the hops ever grown in this country have been produced in New York. In certain sections of the State the crop is the chief one of the farmer, and the sale of it the leading business of the community. In the year

1860 the counties of Oneida, Madison, Otsego and Schorhaire are said to have each produced more hops than were grown in the United States outside of New York. In 1875 the two counties Oneida and Madison produced something over 40,000 bales, probably about one-third the entire crop of the country. The exports from the port of New York, year ending Aug. 31st, were, in 1869, 69,463 bales; 1870, 56,453 bales; 1871, 24,577 bales; 1872, 6,095 bales; 1873, 9,315 bales; 1874, 1,638 bales; 1875, 15,995 bales; 1876, 46,116 bales. The imports to the port of New York, year ending Aug. 31st, were, in 1869, none; 1870, none; 1871, none; 1872, 5,800 bales; 1873, 20,885 bales; 1874, 13,444 bales; 1875, none; 1876, none.

The American hop is of fine quality, indeed it is claimed that when our hops are properly picked and dried, no country produces a finer article. The quality of hops can be readily determined by their general appearance, odor and amount of lupulin contained in them, the best being free from rust or mould, the bracts of a bright yellowish-green color, and showing none of the dark spots produced by the hop-leaf louse (Apis Humuli). The odor of hops is peculiar, powerful and penetrating, yet to most people agreeable; it is due to a volatile oil. In judging of hops little or no attention is paid to their taste. Climate appears to have as much influence on the hop crop as soil. A hot, scorching sun is unfavorable, because it causes the strobiles to dry before maturity. It has been observed that favorable weather for corn is not the best for hops; thus in the fall of 1875 the corn crop of central New York was much smaller than usual, while the yield of hops was unusually large. Damp, muggy weather is very unfavorable, causing the strobiles to mould, particularly if they have been damaged by the hop-leaf louse. Temperate weather and a clear atmosphere are the climatic requisites for a successful cultivation of the crop.

Two varieties of the hop are principally grown in New York, being known as the large and small cluster. No particular difference is to be seen in these two varieties, excepting the one is larger than the other, and no difference is known in quality. Besides these two varieties, a third, known as the Palmer Seedling, is now coming into quite extensive cultivation. This variety was first obtained from the seed, by the late Charles Palmer, of Waterville, N. Y., some twelve or fourteen years ago, and is now under successful cultivation in New York, some of the Western States and in Canada. This variety does

not yield quite as well as the other kinds; no difference, however, is to be noticed in the vine, and the hop itself is of large size and fine quality, hardly to be distinguished from the large cluster. The peculiarity of this hop is that it matures some three or four weeks in advance of the ordinary kinds, thus enabling the grower of them to get his crop into market before the ordinary kinds are fit to pick.

Hops are cultivated, picked, dried and baled in New York after much the same manner as described by Mr. Wm. H. Ramsey in his very interesting paper entitled "Hop Culture in Wisconsin," and published in the "American Journal of Pharmacy," 1875, page 241.

In starting new yards the hills are usually placed seven feet apart one way by eight the other. Some growers, however, place the hills only six feet apart in each direction. As the hop plant does not yield the first year, corn or potatoes are planted among the young vines; the latter crop is the better for the hops, because it gives them more exposure to the sun. The second year the vines are trained on poles or strings prepared for the purpose; two poles are generally used to each hill, but sometimes three are used, and growers who set the hills only six feet apart place but one pole to each hill. The poles are set immediately after grubbing. Close cultivation pays best, and after the poles are set the yards may be tilled nearly every day to advantage; the yard in which not a green thing aside from the hop itself is to be seen being the most productive.

When the vine has grown two or three feet in length, usually about the middle of May, tying is commenced. This work is largely done by women and girls, who at this time go through the yard, and, with strings or rushes cut for the purpose, tie usually two vines to each pole; the remaining vines, of which a dozen or more often spring from a hill, are after a time removed, thus throwing the whole vitality of the plant into the two vines which ascend the pole. The largest of the young vines are among those removed, as they run more to vine and are not as productive as those of a medium size. The tying has to be kept up from time to time, until the vine is well up the pole.

The stringing of hops is of late coming much into vogue. When hops are to be trained in this way they are set out the same as though they were to be poled. To the first row of hills are placed stakes four or five feet in length, pieces of broken poles being generally used for the purpose; to the next row are placed long poles

alternately with stakes; to the third row are placed stakes, as in the first; to the fourth row stakes and poles, as in the second; and so on through the yard. From each stake are run two strings, nearly to the top of the neighboring poles; two vines are usually run on each string, and two on the poles. This kind of training is called tent fashion, from the resemblance of the yard to a series of tents, and is the usual way of training the vine on strings. Other ways have been tried, but this method has thus far proven the most successful. The chief advantage of this method of growing hops is that it is much the cheapest way, only one pole having to be provided where sixteen are used if the hops are poled in the ordinary way. The kind of twine used with the best satisfaction is coarse wool twine; this costs about eleven or twelve cents per pound, and it takes from fifty to sixty pounds to the acre; the stakes used are worth two to four cents each. When hops are poled in the usual way it takes about 1,500 poles to the acre; these cost from about twelve to fourteen cents each. Another advantage claimed in stringing hops is that they are not as liable to be damaged by winds; the strings giving more than poles before the storm, prevents the hops from being whipped together. The vines, however, do not climb the strings quite as readily as poles, and consequently it is more work to keep them tied. Another disadvantage is that they are not quite so conveniently picked as from the poles, and it may be also mentioned that the idea prevails among some growers that the vine trained on strings is not quite as productive.

After hops have got a fair start in the spring the growth of the vine is generally very rapid; a number of vines watched by the writer grew, on an average, more than six inches a day for eight days in succession, and in favorable weather exceptional vines have been known to grow ten to twelve inches in twenty-four hours. But the hop is about the most uncertain crop; the prospects of a yard may be wholly destroyed in a single hour by hail, which proves very destructive to the vine; heavy winds at times lay the poles level with the ground; then may come lice or blight, either of which is liable to destroy the crop in a few days' time: only after picking is well advanced is there a certainty as to what the crop will be.

The hop-leaf louse (Apis humuli) is the great dread of the hop grower; more hops are probably destroyed by this insect than by all other causes combined; indeed growing yards are now scarcely to be

found where the insect does not flourish in considerable numbers. The hops are sometimes destroyed in the burr by this insect, but most generally they enter the strobile after it is formed and nearly ripe, and destroy the hop by piercing the bracts, thus allowing the juice to exude, which together with the excretion of the insect causes the hop to mould, and unless they are very soon picked and dried the inside turns nearly black; the hop then acquires a disagreeable odor, and is rendered entirely worthless.

Blight, or rust, is a disease which attacks the vine generally while the hop is in the burr, and gives it the appearance of having been scorched by fire; the hops on such vines do not fully develop.

Hop picking is usually commenced about Sept. 1st; many of the pickers are brought from neighboring cities, and boarded by the growers who employ them until the hops are gathered, some of the larger growers having at this season a hundred or a hundred and fifty hop pickers to provide for.

The crop is necessarily gathered before entirely ripe, because if left to fully mature on the poles great loss occurs from their being then easily shaken from the vine or whipped to pieces by winds; many growers, however, greatly damage their crop by picking when too green; when this is done, the hop, of course, does not contain its full amount of lupulin, which is the valuable portion; moreover, the roots are much damaged by a too early cutting away of the vine; indeed, it appears that the vine is usually cut away too soon for the good of the root; as in cases where the crop has been so damaged as not to be picked, the vine not being cut away until completely dead, the yield the following year has been found to be unusually large.

Hop picking generally lasts from two to three weeks. The boxes, as fast as they are filled by the pickers, are emptied into sacks; they are then taken and placed in kilns, where they are dried by artificial heat. After drying the hops are pressed, by lever hand-presses, into bales of about two hundred pounds each; they are also pressed into small packages of from $\frac{1}{4}$ to 1 pound. This is a convenient form for the druggist; but, as far as the observation of the writer goes, most all of the hops put up in this form are of very inferior quality, and many of them entirely worthless; in fact, this method seems to be taken for disposing of utterly worthless hops, which could not be sold, at any price, in any other form.

The actual cost of raising hops is, on an average, about ten cents per pound. Their price is as variable as the crop is uncertain, having ranged within the past few years from the actual cost of production to fifty and even sixty cents per pound; most years the crop brings a price which is remunerative to the grower, and, in fact, the culture of hops, if carried on for a succession of years, is said to pay better than most any other kind of farming.

THE MANUFACTURE OF OIL OF TURPENTINE, ROSIN AND TURPENTINE.

By Isidore Zacharias, Ph. G.

From an Inaugural Essay.

Turpentine is the oleoresin of Pinus palustris and other species of Pinus. This is a large indigenous tree, growing in dry, sandy soils, from the southern part of Virginia to the Gulf of Mexico; it is 60 to 70 feet high, and the diameter of its trunk about 15 or 18 inches for two-third of its height; the leaves are about a foot in length, of a brilliant green color, and united in bunches at the ends of the branches. The manufacture of turpentine was for a long time only carried on in North and South Carolina, but, since the last few years, Messrs. Lippman Brothers, of Savannah, Ga., had their attention attracted by the vast forests of pine trees in Georgia and Florida, and to them is due the credit of having opened a branch of business which is increasing yearly. The number of barrels received the first year were in the neighborhood of 3,850; the receipts for last year amounted to about 28,000 barrels rosin and turpentine.

The mode of extracting the crude turpentine from the trees is as follows: During the fall and winter of the year the trees are, what is termed by manufacturers of turpentine, "boxed," excavations are made into the trunk of the trees about 6 to 8 inches above the roots; the shape of these so called "boxes" are somewhat peculiar, the lower lip is horizontol, the upper arched, the bottom of the "box" is about 5 inches below the lower lip and 8 to 10 below the upper; the capacity of these "boxes" varies between $\frac{1}{2}$ to 1 gallon. In a day or two after the "boxes" are made, the trees are deprived of the bark to the height of about 3 feet above the "box," and also some of the wood is scraped off, in order to allow the so-called *crude* to exude; this is termed

"hacking," the hacks being made in the shape of a letter L, and either closed or open; from this the *crude* begins to flow about the middle of March, runs best during July and August and begins to slacken again in September and October. After the "boxes" are filled the *crude* is dipped out by what they call "turpentine dippers," a peculiarly constructed spoon or ladle, into barrels which are generally made of pine and of a rude construction, or sometimes old lard and other barrels are used. These are then removed to the still, where it is allowed to thicken sufficiently to distil off the oil or *spirits* as it is usually called.

The trees require scraping every 8 or 10 days so as to expose a new surface, the flow of the former hacking being clogged by the congelation of resin; a very slight scrape is all that is necessary to set the *crude* flowing again. The number of "boxes" in a tree depended upon its size. The trees are good for a number of years, though they are hardly fit for use after four or five years, the rosin not being worth much, and its yield of oil of turpentine is very slight. The trees are scraped in some instances for such a number of years that ladders are necessary to hack the tree afresh; therefore, the oleoresin as it flows downwards into the "boxes," becomes somewhat congealed, and some of the oil evaporates so that it must be scraped off; it is then put into barrels and afterwards distilled; it takes about 10 barrels of *crude* to produce 2 barrels of *spirits* and 6 of *rosin.* The flow of the first year is always the best and is therefore called "virgin dip." The next process is

The Distillation of the Oil.—After sufficient *crude* has been collected the barrels are emptied into the still, which generally holds between 12 and 20 barrels. The still is mostly, or perhaps always, made of copper; its shape that of the common copper still, an illustration of which can be seen in Parrish's "Pharmacy," p. 760. The head of the still is connected with the worm, which is contained in a large tank surrounded by water, by a long, wide piece of copper. The still is set in a brick furnace, and, after it has been filled, the dirt, scraps of wood and other impurities are skimmed off, after which the head is adjusted and luted on, then heat is applied, when the oil runs through the worm and is collected in a barrel placed at the bottom of the tank containing the worm. Water is condensed with the oil, but as it flows into the barrel, the water being the heaviest, sinks to the bottom, and the oil is dipped out and emptied into regular spirit barrels in which we find it in

commerce. Water is added from time to time to keep the *crude* in a soft consistence, for when it becomes too thick it takes longer to boil, thereby injuring the product. The water is added through an opening in the still head. After nearly all the oil has been extracted the head of the still is taken off, and a stop-cock, which is situated near the bottom of the still, is opened, and the residue, which is rosin, flows out and passes through three or four large strainers, the bottom one being covered with cotton batting, into a large trough, from where it is dipped into barrels made for that purpose; said barrels contain between 280 and 400 lbs. As stated before, care must be taken to keep sufficient water in the still, otherwise the rosin becomes charred black. The rosin of the first years' dip is the best, and is consequently worth the most; the opaqueness of rosin is caused by too much water being left in the still. The rosin for the first part of the season of the first year's product is very light-colored and transparent, like "window glass." Each succeeding year the color becomes darker, and finally the rosin is black or nearly so, and there is a very small yield of the oil. We often obtain rosin which is very soft, owing to too much of the oil being left to run out with the rosin.

The method of obtaining tar, as practised by the manufacturers, is very simple. A large hole is dug in the ground, in which are placed pieces of pine, one on the other. After a sufficient quantity has been placed therein they are slowly burnt, when the tar exudes and flows through a trench into a trough, where it is ladled out into barrels; in this way it is generally contaminated with chips, dirt, etc. This product is capable of being distilled, when some pyroligneous acid and an oil of tar are obtained, and what is left is pitch.

GOA POWDER AND CHRYSOPHANIC ACID.

By Charles Bullock.

(*Read at the Pharmaceutical Meeting October* 16.)

In asking your attention to the specimens of Goa-powder and chrysophanic acid, I have *nothing new* to communicate regarding them; but as the literature of the subject is somewhat scattered, a *résumé* of what has been already published may not be without interest to those present at this meeting.

The first notice we have of Goa was in 1874, in a paper from Dr.

Fayrer, of Calcutta, which was published in the "Medical Times and Gazette," on the treatment of Indian ring-worm by Goa-powder. Dr. Fayrer states that in the treatment of certain cutaneous diseases he found no remedy as certainly effective as a secret preparation sold in small vials by the chemists of Calcutta and Bombay under the name of "Goa-powder."

In 1875, Dr. J. F. DaSilva Lima describes the Araroba, a tree growing in Brazil, belonging to the leguminosæ as furnishing a powder known in Brazil as Po' de Bahia, and in the province of Bahia as Araroba powder, as a powerful remedy for cutaneous affections. Dr. Lima believes in and endeavors to establish the identity between Goa and Araroba.

In April, 1875, Mr. E. M. Holmes read a paper before the Pharmaceutical Society of Great Britain "On the identity of Goa-powder and araroba or chrysarobin."

In March, 1877, Prof. Attfield showed that chrysarobin contained from 80 to 84 per cent. of chrysophanic acid.

The botanical source of Goa is not certainly known; by some it has been referred to a lichen, by others to a leguminous plant; again, it has been referred to different species of centrolobium and cæsalpinia, growing in Brazil, and which are said to yield large quantities of chrysophanic acid. Cuttings from the plant or tree yielding goa have been sent to the Royal Botanical Gardens at Edinburgh, and in time we will have a more certain knowledge of its botanical source.

As the drug is a product of South America, the question naturally suggests itself how it came to be introduced into Europe by way of India. The solution of the query is to be found in the fact that the commerce of Brazil, when under the control of Portugal, was carried on by the mother-country chiefly between her South American possessions and her colonies in the East, and Goa, on the Malabar coast, was formerly the capital of the Portuguese dominions in India.

Chrysophanic acid, which forms so large a portion of Goa-powder, was discovered by Schrader in 1819. He named it "Resinous yellow of wall lichens" (Parmelia parietina). Messrs. De LaRue and Müller subsequently obtained it from rhubarb-root, in which it forms the yellow coloring matter. It is also found in the yellow-dock and other plants.

Chrysophanic acid dissolves in 1125 parts of 85 per cent. alcohol at

30°C., and in 224 parts of boiling alcohol. It is soluble in ether, glacial acetic acid, amylic alcohol, and in alkaline fluids. In benzole it dissolves freely, and this menstruum is used to abstract it from Goa-powder.

Medical Properties.—In the treatment of cutaneous diseases, such as Tinea circinata, Tinea tonsurans, Mentagra, etc., Goa-powder has been used mixed with acetic acid, and applied with a brush; or, 20 to 80 grains of the powder are mixed with 10 grains of glacial acetic acid, and incorporated into one ounce of ointment.

Dr. Ashburton Thompson has published the result of 319 observations made upon the effects of the internal administration of Goa and chrysophanic acid. As a summary of these observations, Dr. Thompson finds that Goa is emetic and purgative—vomiting is usually the first action unattended, by any depression.

Dose.—On children from 9 to 12 years of age, 6 grains produce no effect; on children from 5 years down this dose is sure to operate, but the time of action may vary from 10 minutes to 12 hours. The effect of the same dose is not increased with diminution of age. With adults a dose of 30 grains operated with tolerable uniformity; the interval elapsing before manifestation of effect was seldom sooner than 20 minutes, and may be as long as 5 hours.

As a conclusion to these extended observations, Dr. Thompson says that "Goa (chrysarobin) in a dose of 20 to 25 grains for an adult, or 6 or more grains for children, is an emetic purge, unattended by any inconvenient symptoms. It is as certain as other medicines which act in the same way."

Chrysophanic acid in a suitable dose (15 to 20 grains) will cause vomiting and purging; if the dose be small, it will vomit only. In this action it is the reverse of Goa, which is likely to purge only in small doses. For children of 10 years or under 6 grains is a dose; like Goa, no increase of effect is produced on younger children by the same dose. On children of less than 4 or 5 years its action is more uncertain than Goa—it fails to act, acts feebly, or vomits only; it never acts with unexpected violence. With adults the action of the acid is pretty certain in doses of 15 grains. Idiosyncrasies require an adjustment of dose of from 8 to 20 grains. Whatever the condition of the patient, it causes the evacuation in one way or the other of large quantities of bile.

The action of the resin of Goa (after the separation of the chrysophanic

acid) is identical with that produced by the powder, but much more powerful. Chrysarobin and chrysophanic acid, when administered in connection with alkalies, have their activity much increased.

Six or 8 grains of chrysophanic acid, followed by a draught containing 15♏ of liq. potassa, has all the effect of 15 grains of the powder. The action is usually not until the lapse of two hours! This dose, taken at night, does not operate until morning. In such case sickness is always the first effect, but the purging ensues almost immediately afterwards.

ON THE CONSTITUENTS OF PODOPHYLLUM PELTATUM, Lin.

By William Charles A. Busch, Ph.G.

Abstract from an Inaugural Essay.

The resin was prepared by mixing the concentrated tincture

1. *With water.* A turbid liquid was obtained, which after a time produced a light-grey precipitate, completely soluble in ether and alkalies. On being again set aside the turbid liquid settled very slowly, but on the addition of a little muriatic acid it became clear, and the dark-grey precipitate was found to be nearly insoluble in ether, but readily soluble in alkalies.

2. *With acidulated water.* A greyish precipitate was readily obtained which retained its color if dried at the ordinary temperature; a higher temperature deepened the color very perceptibly, and caused the resin to fuse to a blackish-brown mass, which on being dissolved in alcohol and precipitated by cold acidulated water was again obtained as a greyish powder. It was completely soluble in alcohol and alkalies, and partly in ether. On incineration a little ash was left. With hot water a solution was obtained which precipitated on cooling; cold water dissolved a little of the resin, the yellowish color of the solution being discharged by an acid and reproduced with a darker shade by alkalies.

3. *With alum solution.*—A bright-yellow pulverulent precipitate was obtained, which darkened somewhat by hot water, but did not fuse to a brown mass. On incineration an ash was left, consisting mainly of alumina; boiling with dilute hydrochloric acid removed most of it from the resin, which afterwards left but very little ash.

Resin Soluble in Ether.—The officinal resin, obtained by precipitation with water acidulated with muriatic acid, yielded to ether 60 per

cent. of its weight. This portion dissolved in alcohol with a light-brown color; the solution had a bitterish taste, and was precipitated light-greyish by water, bright-yellow by alum solution and orange-yellow by alcoholic solution of lead acetate. All the precipitates dissolve to some extent in hot water, most of the dissolved portion being reprecipitated on cooling. The alum precipitate left 1·25 per cent. of ash, consisting of alumina; the resin obtained by evaporating the ether left no fixed residue.

Resin Insoluble in Ether.—It was found to have a bitter taste and to be soluble in alcohol and alkalies, and slightly so in water. The alcoholic solution became turbid on the addition of water, and very gradually yielded a greyish precipitate; acidulated water produced a similar precipitate, solutions of alum and of acetate of lead somewhat darker, but not yellow precipitates. The bright-yellow color of the resin prepared with alum solution is therefore due only to the resin soluble in ether.

The aqueous solutions of both resins gave no reaction with Mayer's solution, except in one instance; their alkaline solutions were of a yellowish-brown color, when sufficiently diluted with water were not precipitated by acids, and after having been boiled with dilute hydrochloric acid gave no indication of sugar with Trommer's test.

Principles Soluble in Water.—The tincture precipitated with acidulated water yielded a reddish filtrate, of a very bitter taste, and containing sugar, as indicated by Trommer's test. On concentrating the solution, an amorphous bitter mass separated, which dissolved in alcohol, but could not be obtained in a crystalline state.

The filtrate obtained by precipitating with alum solution was likewise bitter, and on being concentrated changed to ruby-red and separated crystals of alum; a blackish, semi-fluid, bitter substance was likewise separated, which was insoluble in ether, carbon bisulphide and petroleum benzin, but dissolved in alcohol and warm water. It was not obtained in a crystallized state.

On mixing the tincture of the rhizome of podophyllum with ether a dark-colored mass separated, which had a very bitter taste, but contained sugar, as indicated by Trommer's test.

LABORATORY NOTES.

Brief abstracts from theses presented to the Philadelphia College of Pharmacy, March, 1877.

Copaiba.—Jos. M. Fulton reports having examined seven commercial specimens of copaiba, which he found free from the adulterations sometimes met with in this drug, such as turpentine, gurjun balsam, castor and other fixed oils. The first two mentioned in the table below were incompletely soluble in a small quantity of absolute alcohol, the remainder dissolved readily therein. On being boiled with water the first four left as residues a hard, the others a more soft resin. The other results are tabulated as follows:

Spec. gr.	31 grains yielded on distillation Vol. oil	Resin	Loss.	Number of drops in 30 cc.	1 gram.	Drops of vol. oil in 20 drops copaiba.	Solidified with magnesia.
·937	21·7	8·5	·8	912	22	22⅓	not
·938	20·	8·7	2·3	880	22	20⅔	not
·950	17·	12·7	1·3	832	21	18⅓	in 10 days
·950	17·5	12·8	·7	816	20	19⅔	" 12 "
·957	11	18·5	1·5	744	20	12½	" 3 "
·960	9·5	20	1·5	720	19	12½	" 2 "
·970	9	20·3	1·7	680	20	10	" 2 "

The copaiba was dropped from a minim measure; 1 gram oil of copaiba yields 35 drops.

Doryphora Decemlineata.—It has been occasionally asserted that the Colorado potato beetle caused blistering of the hands of its captors. These reports induced L. Dembinski to examine the full-grown beetle and its larva for cantharidin, the extraction of which was attempted with choloroform and with ether, with negative results.

Citrate of Iron and Quinia.—Oscar Zinn procured six commercial samples of this salt, which were separately dissolved in acidulated water, precipitated by sodium carbonate, the precipitate washed with water, and the dissolved quinia estimated in the filtrate by agitation with ether. Four samples yielded respectively 11·7, 14·4, 14·4 and 15·4 per cent. of this alkaloid, the nature of which was proven by its solubility in ether, and the green color resulting from the action of bromine water and ammonia. The other two samples contained 6 and 9 per cent. of cinchonia, but no quinia.

The same ground was gone over by Henry G. Drueding, who precipitated the solutions of the salt with ammonia, agitated the mixture repeatedly with ether, evaporated the etherial solutions, and weighed the

residue. The six samples were free from cinchonia, the precipitates being completely dissolved in ether. The samples yielded respectively 2, 8, 10, the remaining three 15 per cent. of alkaloid.

Iodide of Potassium.—Five different samples were examined by Eli L. Klopp. They all had an alkaline reaction, were free from bromide and chloride, but with the exception of one, contained traces of iodate.

Tincture and Ammoniated Tincture of Guaiac.—Thos. D. Williams proposes the following modification of the officinal process: Six troyounces of guaiac resin in powder No. 40 are mixed with one and a half pints of alcohol in a half gallon bottle, and set aside in a warm place for 24 hours. The liquid is then poured off, the undissolved portion packed into a funnel, the alcoholic liquid first poured upon it, and the percolation finished with alcohol until two pints of tincture have been obtained. The ammoniacal tincture may be conveniently made in the same manner. The amount of insoluble residue depends upon the purity of the guaiac resin.

Elixir of Hops.—Jno. H. Kinports has found the following formula to yield an agreeable preparation: Hops ℥ii, cloves and anise each gr. lx, cinnamon gr. lxxx, all in fine powder, are mixed and macerated in a portion of the menstruum obtained by dissolving oil of orange fʒiiss in alcohol and water each f℥xii. After 24 hours the powder is firmly packed into a percolator and displaced until 24 fluidounces have been obtained, in which sugar ℥xii is dissolved. Each fluidounce represents 30 grains of hops, the bitter taste of which is nicely blended with the aromatics.

Unguentum Hydrargyri Nitratis.—By John A. Gingrich, Ph. G. Purified ox marrow is recommended as the base for this ointment. The process found to answer best is the one first suggested by Mr. R. Rother, in 1871. The fat is fused, and at a moderate heat treated with one half the nitric acid ordered by the Pharmacopœia, and after the reaction has ceased, the mercury, dissolved in the other half of the nitric acid, is added. Thus prepared it retains its handsome color for a long time.

Unguentum Zinci Oxidi.—Walter W. Kœhler accounts for the difficulties encountered by many in preparing this ointment, by the use of the commercial oxide of zinc, which is often not as smooth and

uniformly fine as it may be obtained by the pharmacist. He suggests to prepare carbonate of zinc in the usual way from sulphate of zinc and carbonate of sodium, to wash the precipitated carbonate thoroughly, and when dry, reduce it to a fine powder. A suitable crucible is then heated to redness, the powder is introduced and after some time stirred two or three times. As soon as a portion of it, when thrown into dilute acid, dissolves without effervescence, the crucible is removed, the powder cooled upon a shallow dish and preserved in well-stoppered bottles. If heated too much or too long, the oxide will be darker and gritty; when properly made it is a yellowish, very fine powder, which may be thoroughly mixed with lycopodium or powdered starch, simply by agitation and without the use of a mortar. It costs but little more than the commercial article, and may be readily made into a perfectly smooth and fine looking ointment. Instead of lard or benzoinated lard the authur prefers a paraffin ointment, made from heavy cylinder oil, by purifying it in the manner indicated in "Amer. Jour. Phar.," 1873, p. 534, and 1874, p. 1.

Preparations of Cubebs.—Louis F. Griffin found that light petroleum benzin (gasolin) dissolves from powdered cubebs 16·5 per cent. of oil and resin, while wax and cubebin are insoluble therein; gasolin would therefore appear to be adapted for preparing an active oleoresin of cubeb. The residue left after preparing tincture of cubeb from four troyounces of the powder yielded to gasolin 115 grains of oleoresin, and the two pints of tincture can therefore contain only 200 grains of the oleoresin. Spirit of nitrous ether, which is used in Mettauer's tincture of cubeb, exhausts it thoroughly.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Tasteless tannate of quinia is prepared by P. J. Haaxman by dissolving 1 part quinia sulphate in acidulated distilled water, and precipitating the alkaloid with soda solution, dissolving it in 10 parts alcohol, sp. gr. ·882, and diluting this solution with warm water so as to remain clear while in the water-bath. This liquid is added gradually, and with continued stirring, to a solution of 3 parts tannin in 60 parts distilled water, the mixture thrown upon a filter, and the precipitate washed with warm water until the filtrate is colorless and free from astringent taste,

whereby the bitter acid tannate is decomposed and the tasteless neutral tannate left upon the filter.—*Jour. Phar. Chim.*, 4th ser., xxv, p. 420.

Adulterated Sulphate of Morphia.—D. B. Dott has met with a sample of this salt, offered in the English market, which contained 34·63 per cent. of anhydrous sodium sulphate.—*Phar. Jour. and Trans.*, August 4th.

Liquor Ferri Albuminati.—Dr. Friese prepares a solution of iron albuminate by mixing the white of one egg with 10 grams liq. ferri sesquichlorati, Ph. Germ., washing the mass well with distilled water, and adding to the insoluble portion 500 grams of distilled water and 12 drops of muriatic acid. An almost complete solution is effected in three days, and is given in doses of a tablespoonful three times a day.—*Phar. Cent. Halle*, No. 31, from *Berl. Klin. Wochenschr.*

Spiritus Ætheris Nitrosi.—For estimating the amount of nitrous ether, Th. Rosenbladt proposes to decompose the ether by caustic potassa, whereby potassium nitrate is formed, which is left behind on evaporation. The residue is transferred to a small flask containing solution of ammonium chloride, and filled with carbonic acid gas. On heating it, ammonium nitrate is formed and then decomposed into water and nitrogen: NH_4NO_2 yields $2H_2O+2N$. The gas is passed over potassa, and the amount of ethylnitrite is calculated from the volume of nitrogen obtained.—*Phar. Zeits. f. Russl.*, No. 9.

Volatile Oil of Storax.—J. H. Vant Hoff corroborates Bertholet's observation that this oil is lævogyre, but finds it due to *styrocamphene*, probably $C_{10}H_{18}O$, of which storax yields only 1-20 per cent.; it boils between 170° and 180°C. and sodifies at about 10°C. Bertholet found the volatile oil to contain *styrolene*, which E. Kopp regards to be identical with *cinnamene*.—*Bull. Soc. Chim.*, 2d ser., xxv, p. 175.

A NEW METHOD OF DETECTING ALCOHOL WHEN USED as an ADULTERANT of the ESSENTIAL OILS.

By Edmund W. Davy, A.M., M.D., M.R.I.A.,
Professor of Forensic Medicine in the Royal College of Surgeons, Ireland.

It is well known that one of the most frequent of the adulterants of the essential or volatile oils, at least of those that are the more expensive, is alcohol; this being the case, at the suggestion of my friend Mr. Charles Tichborne, I made some experiments on the appli-

cation of my molybdenum test for alcohol to the detection of that substance when used for such adulteration, and finding that it might be usefully employed for this purpose, I brought the matter under the notice of the Pharmaceutical Society of Ireland, at its meeting in last April. A number of circumstances, however, prevented me from publishing before this my communication on that subject.

Having briefly described the molybdenum test for alcohol, which was published last year in the "Pharmaceutical Journal," "Chemical News," and in other scientific periodicals, I pointed out how it afforded a very ready means for the detection of alcohol in the essential or volatile oils, it being only necessary to agitate a little of the oil under examination with a small quantity of distilled water, and having allowed the mixture to stand for a short time till the oil and water have again separated, to take a drop or two of the watery portion and add to it three or four drops of a solution of molybdic acid in strong sulphuric acid, when the characteristic blue reaction will appear if alcohol be present. The following very simple way I adopted in applying this test to the essential oils: A glass tube of about four inches in length and of about a quarter of an inch in diameter in its internal bore was taken, one end of which being heated was drawn out to a point, and closed so as still to leave a very small hole, whilst the edges of the other end were merely rounded by fusion,[1] and to this latter was adapted a sound, well-fitting cork, or, better still, an India rubber stopper, capable of closing the aperture perfectly air tight. The small hole being closed by one of the fingers placed firmly against it, the tube is filled to about one-third[2] of its contents with distilled water, and then about an equal volume of the essential oil added. The larger end of the tube is now to be tightly closed with the cork or stopper, the finger being still kept

[1] Several tubes suitable for this purpose may be easily made by selecting a tube of rather soft glass, not too thin in its substance and of about the bore stated, and having with a spirit lamp or by means of gas drawn it out to a fine bore at intervals of about eight or nine inches apart, the tube is cut with a file, both at the centres of contraction and of the intervals between them, and finally the edges of the larger end of each tube rounded and of the smaller one closed to a fine point by fusion.

[2] In cases where the degree of adulteration may be small, it will be well to diminish the proportion of the water employed so as not to dilute the adulterant too much; and where the very expensive oils are the subject of examination, smaller sized tubes than those recommended may be employed.

on the small hole, and the contents of the tube is then strongly agitated for a few moments; after which the pointed end is turned upwards and the finger removed, to allow the air condensed by the closing of the larger end to escape so as to avoid unnecessary loss of the mixture; and finally the tube being again reversed, it is supported on a stand with its pointed end downwards, but not resting on it. In this upright position it is left till the oil has separated from the water and risen to its surface, which in most cases takes place in a comparatively short time, leaving the aqueous portion below quite clear or very nearly so. When such is the case a drop or two of this portion is allowed to escape, which is easily effected, either by pressure on the cork or stopper, by holding the upper part of the tube in the hand so that its warmth may expand the contained air, or by slightly drawing out the cork (which will cause some air to enter at the pointed end) and then pressing it in again; by one or other of those simple means, the necessary quantity of the aqueous portion will be easily forced out of the tube. This on being brought into contact with three or four drops of the molybdic solution placed in a little porcelain capsule or on any white porcelain or delf surface, will, if the oil has been adulterated with alcohol, develop after a few moments the characteristic intense blue reaction of that substance.

The molybdic solution I have employed for this purpose was the same as that which I have already recommended to be used in the adoption of my test for the detection of alcohol generally, which is readily prepared by dissolving, with the aid of a gentle heat, one part of molybdic acid in ten parts by weight of pure and concentrated sulphuric acid. This solution should be kept in a well-stoppered glass bottle, as it quickly absorbs moisture, becoming too dilute, and is otherwise injured if it is left exposed to the air.

As regards the little testing tube I have suggested for the examination of the essential oils, I may observe that if it is properly constructed and corked perfectly air tight, it will hold its contents without allowing it to drop out when not required; and if the pointed end of the tube is not left touching any object, which would withdraw the fluid by capillary attraction, there will only be a veay trifling loss of the watery portion from evaporation through the small aperture, even after keeping for a considerable time.

The experiments I have made on a number of the essential oils,[1] which were apparently pure, or at least were unadulterated with alcohol, show that if they are agitated with distilled water, and after they have again separated from it a drop or two of the watery portion be taken and tested in the manner already described, there will either be no change of color observable, or, what is more frequently the case, there will be a faint light-brown or yellowish-brown tint produced, or lastly, in some few instances a light olive or grey is developed, quickly changing to the former tints, all of which soon fade away, leaving the mixtures colorless or very nearly so. But if the oil is adulterated with alcohol, the water dissolving out that substance, a drop or two of the aqueous portion develops with the test solution, after a few moments, the deep azure-blue coloration which is so characteristic of that substance, and this is much more permanent, generally speaking, than the shades of color caused by the essential oils alone when so treated, though even this, as in their case, will fade away, leaving the mixture colorless, or very nearly so, after a shorter or longer exposure to the air. If the amount of alcohol present be considerable the blue effect will be produced after a few moments, even at the ordinary temperature, but where the quantity is very small I have found that the application of a very gentle heat renders the test far more sensitive.

As, however, I have ascertained that a heat of 212° Fahrenheit, and in some cases a temperature even considerably below that point, especially if continued for some time, will develop a more or less blue coloration with the water which has been agitated along with essential oils apparently pure, when it reacts on the molybdic solution, some caution must be observed in the application of heat.

It appears, however, from my experiments with the essential oils I have operated on, that the water so treated and then allowed to separate from them, as in this method of testing, might be heated with the molybdic solution to 120° Fahr. on a water-bath, without developing a blue coloration, at least, unless that heat is continued for a considerable time, though such a comparatively low degree of heat is quite

[1] The following were the essential oils experimented on: otto of roses, rose geranium, neroli, neroli petit grain, santal wood, rhodium, patchouly, bergamot, verbena, lavender, rosemary, cinnamon, bitter almonds, lemon, bitter orange, cloves, caraway, peppermint, nutmeg, mustard, anise, fennel, cajaput, cubebs, juniper, turpentine.

sufficient to develop, almost immediately, the blue reaction if alcohol be present. But owing to heat acting in the manner described, I would recommend the test to be first applied at the ordinary temperature, and if it fails to indicate the presence of alcohol it shows that either the oil is free from that substance, or if any is present the quantity must be extremely minute, and if the latter is the case it may be readily detected by slightly warming the mixture, taking care, however, that the heat should not rise much beyond 120° Fahr., which, if it occurred, would create some uncertainty as to the cause of the blue reaction.

By means of this test I have ascertained that several samples of otto of roses sold to me as genuine were adulterated with more or less alcohol, and that a sample of rose geranium oil lately in the market, which was assured to Mr. Tichborne as being a genuine article and one of superior quality, was very largely adulterated with alcohol. From several experiments I have made with the more expensive essential oils, mixing them with different proportions of alcohol, I found that where they were mixed with one-twenty-fifth, one-fiftieth, or even with one-hundredth part of their volume of rectified spirit of wine, that its presence could readily be detected by this test, and I have no doubt but that it is capable of detecting much smaller proportions of that substance should it be present as an adulterant in different essential oils.

I should observe, that where the oil from its density will not rise readily to the surface of the water after agitation, as occurs with a few of the volatile oils, this difficulty I have found may be readily overcome by adding to the contents of the tube a little sulphate of magnesia, which, dissolving in the water and increasing its density, will, if employed in sufficient quantity, cause the oil to rise to the surface, leaving the watery portion below clear and suitable for testing with the molybdic solution.

Before concluding I should also remark that the oils themselves must not be added directly to the test solution, for I find that many of them when so treated after passing rapidly through various shades develop a deep blue even though they are apparently pure, and those that do not produce that color give rise to such dark shades of brown, olive or black, as to mask more or less completely any blue coloration which might be caused by admixture with alcohol.

The same I found to be the case to a great extent, though acting

more slowly, when the test solution in a capsule was placed under a small bell glass and exposed for some time to the vapor of different essential oils emanating from cotton wadding on which they had been dropped, or from a little vessel containing them. In some few instances, however, by using the test in this way, it enabled me to distinguish very quickly the pure oil from the same kind which had been mixed with a minute quantity of alcohol, and it may, therefore, in some cases be of use in detecting such adulteration, or at least in distinguishing differences in various samples of the same description of oil; but I found that this way of employing the test, though much simpler, was not so generally applicable, nor so trustworthy in its indications, as the method already described.—*Pharm. Journ. and Trans.*, Sept. 15th, 1877.

ON THE PREPARATION OF DIALYSED IRON.

By E. B. Shuttleworth.

As there appears every possibility that dialysed iron will become quite popular, at least for a time, a few practical directions, unincumbered by unnecessary facts or speculations, may serve a useful purpose.

Many methods and modifications of methods have been proposed for obtaining the solution for dialysis, and most of them may be followed successfully. The object is to prepare a solution tolerably concentrated, fully saturated with ferric hydrate, and containing as little acid as possible. I shall describe two methods, each of which has its peculiar advantages. Where time is not an object, as far as duration of the process is concerned; and also in point of economy of labor and materials, the first may be adopted. Where it is desirable to produce a solution that may be finished quickly by dialysis, the second process has the advantage, and, taken altogether, I believe it to be the best.

The first consists in adding ammonia to a solution of perchloride of iron so long as the precipitate formed is redissolved. A solution is produced which contains ferric hydrate dissolved in ferric chloride, with free chloride of ammonium. Either the *Liq. Ferri Perchlor. fort.* B. P., or the *Liq. Ferri Chloridi*, U. S. P., may be conveniently used, and the liq. ammoniæ, sp. gr. ·959 or ·960, of either pharmacopœia, will be found a convenient strength. It will be remembered that this is made by adding to the strong ammonia of commerce about twice its bulk of distilled water. If the ammonia be added to the stronger solution of

iron considerable heat is evolved, and on cooling the preparation becomes gelatinized—often so much so that the vessel containing it may be inverted. It is better to avoid this result, and to this end the solution of perchloride must be diluted until of a specific gravity of about 1·300. This degree may be nearly enough approached by diluting two measures of the B. P. liquor with one of water, or adding one measure of water to five of the U. S. P. preparation. This solution will generally remain permanently bright and fluid. The amount of liq. ammon. required will of course vary with the acidity of the perchloride. The liquor ferri B. P. will sometimes bear as much as an equal volume. A gelatinized solution, even when made from the undiluted liquor, will often become fluid when put upon the dialyser; but, as I have said before, it is better to work with bright solutions.

The second method consists in adding to either solution of the perchloride a quantity of recently-precipitated ferric hydrate. Mix any given quantity of the liq. ferri with about five times its bulk of water and add excess of liq. ammon., also diluted with water. I think a more soluble hydrate is produced when the iron is added to the ammonia, as remarked in the case of the hydrate precipitated from the persulphate; but, in order to proceed in this way, it is necessary to know, approximately, the amount of ammonia required. The precipitate should be washed well, by decantation, with several waters, and then thrown upon a filter to drain for a short time. It may then be dissolved, by the aid of a gentle heat, in as much strong liq. ferri as may be required for solution. The exact quantity cannot be stated, but in no case will it exceed the volume of the liquor precipitated, and sometimes only one-fourth of this amount will be necessary. The solution is now ready for dialysis.

With the majority of pharmacists the dialyser will have to be extemporized out of such materials as may be at hand. The hoop may be a bell-jar, an inverted glass funnel, or what is even simpler and handier, made from one of the flat hoops of an ordinary flour barrel. This may be smoothed a little with a knife or sand paper, and made to the required diameter—10 or 12 inches is a convenient size, if much larger the dialytic septum is liable to belly in the center, and thus make the layer of liquid too deep at that point.

Parchment paper is generally used for forming the septum. This is not the paper that stationers in this country generally supply under this

name, but a paper made less pervious, and strengthened by being dipped in sulphuric acid. Some of the strong and well-sized papers, as those used for legal documents, may be made to answer. It is absolutely necessary that there be no holes in the septum, and to ascertain this it is best to sponge with water the upper side of the paper, and then carefully examine the other side. If any drops appear the places should be marked and a little white of an egg may be applied, and coagulated by heat, or a drop of collodion or shellac varnish may be put upon the spot. Bladder, previously washed, may be used, and will be found to work well, especially if divested of its outer coat.

The septum should be two or three inches larger than the hoop, and should be secured around it with twine, not bound tightly, and the edge should be allowed to stand up around the hoop, so that if any liquid escapes through the joint or hoop it will be retained by the paper. The dialyser will now resemble a drum or sieve, and into this the liquid to be dialysed is poured to a depth of, at most, half an inch. It is then floated on the surface of some distilled water contained in a suitable vessel. If the hoop be of some heavy material it must be supported so that the septum is but barely below the level of the water.

The time required for dialysing either of the solutions whose preparation has been described will vary with the nature of the septum, its extent of surface, the depth of liquid, the frequency of changing the water beneath, temperature, and other conditions which need not be enumerated. If everything works well, and the water is changed daily, the process will be finished in one or two weeks. Distilled water is always preferable, and indeed necessary, especially for the first two or three days. Clean rain-water is the best substitute. The process may be said to be complete when the water no longer shows traces of chlorides, and the preparation becomes nearly tasteless, or at least not ferruginous.

A pig's bladder, completely filled with the iron solution, securely tied, and immersed in water, frequently changed, answers well for making this preparation. The process requires a longer time than with a carefully-regulated and properly-conducted dialysis, but it entails considerable less trouble. When I first tried this plan I was not aware that Professor Dragendorff, of Russia, had, some five years ago, suggested its application to dialysed iron. I can, however, corroborate all that he says. I may also mention that I think it an advantage to pro-

cure the bladder perfectly fresh, as it is then easily cleaned by pure water, and alkaline lye need not be used. Great care is necessary in tying the neck carefully. This can be best accomplished by a few turns of iron wire. Above this may be secured a piece of twine to suspend the bladder by means of a stick or rod, placed on the edge of the vessel containing the water. The bladder should be perfectly full and immersed altogether in water. The attraction of the solution for the water is so great that considerable pressure is manifested, and should any weak parts or holes be in the bladder the liquid will be forced out, water will take its place, and failure result.

As to the strength of the dialysed solution I can say nothing, except that with care, and by using the solutions above-mentioned, it may be kept over 5 per cent.—the quantity of oxide which appears to have been chosen as the standard. One hundred grains of the liquor should be placed in a tared capsule, and evaporated to dryness. The residue should weigh about 5 grains; if more, distilled water must be added in the calculated proportion; if less, the solution may be placed in a warm and dry place until reduced to the proper volume. If much heat is employed, and often in any case, the oxychloride of iron will be deposited as normal oxide, and the preparation will be spoiled. The evaporation of the solution may, as a rule, be considered a very unsatisfactory process, and every care should be taken to render it unnecessary. —*Can. Pharm. Journ.*, Oct., 1877.

A DRUG STORE IN THE FAR WEST.

By Louis Weiss, Ph.G.

The particular location of the store I am about to speak of is in a small, but by no means insignificant town, named Pueblo (after a tribe of Indians who first located there), on the Arkansas, in Colorado; the time from 1869 to 1872. The proprietor was a physician, a graduate of a western medical college.

Previous to this time, the store was in the hands of two physicians, both carrying on business outside of the store and practice. One was Notary Public and somewhat of a politician, the other was Postmaster, while a brother of his was telegraph operator or drug clerk, as occasion required. All these different branches were carried on in the store, a room about twenty-three feet by forty, in a one-story building, built of adobes (sun-dried brick). On the right hand side on entering the store was a case of glass front boxes; this was called the post-office department. On the left hand side was the telegraph office; back of these on each side, next the walls, was the stock of drugs, etc. These were in a dilapidated condition; no regard

was taken to keep them protected from light, heat, dust or moisture. Patent medicines were there an unknown luxury (?) at that time. Back of the store was a small room, termed the consultation room, into which the wily politician lured his victim, poured into his ears such floods of promises and into his glass such quantities of the enthusiastic beverage as none but the firmest could resist. This was about the state of affairs when my preceptor purchased the store and stock, in the year 1868. The post-office with the telegraph office were removed, and in order to make the store pay, the stock had to be enlarged and other goods added, which properly did not belong to the drug business. On my introduction to the store as an apprentice, I found a young man in charge from New York, the doctor having his time pretty well occupied in visiting patients, some of them living a distance of sixty miles from the store, in other small settlements. These trips were generally made on horseback, or per ambulance, and were of frequent occurrence, and on occasions would require his constant attendance for several days, the prevailing troubles being caused by six-shooters, wild bronchos, and last, but not least, cases of confinement. The first three months of my time were spent in learning the names of the different drugs and medicines, and in getting acquainted with the stock, which I found consisted of an innumerable variety of things, such as drugs, patent medicines, wines, liquors, cigars, tobacco, garden seed, paints, oils, varnishes, glass and other painters' material, fixed ammunition, fishing tackle, picture frames, moulding, cord and tassel, clocks, wall paper and trimming, window shades, coal oil, lamps, chimneys, brackets and chandeliers, stationery, playing cards, field glasses, and a variety of minor articles, some of which are, and most others are not, generally to be had in a drug store. The dispensing department was not so well stocked, but was up to the demand, which was generally confined to calomel, blue mass, sulphate of morphia, chloroform, copaiba, spirit of nitre, iodide of potassium and caustic. Valerian, bromide of potassium, sulphate of quinia, chloral hydrate were sometimes called into use. Elixirs, bitter wine of iron and like preparations were occasionally prescribed, but more frequently called for and sold over the counter. Many of the drugs that are in daily demand in Philadelphia never came into the store in my time. The stock was always bought in large quantities, as the goods were either bought in St. Louis, Chicago or New York—more frequently in New York when drugs proper, and in St. Louis when heavy goods—for the reason that it took from six weeks to two months from the time goods were sent for until they were received, as they had to be carried by wagon a distance of from two to three hundred miles, which was generally accomplished by Mexican bull trains; these were not always at hand, then the goods would lie in the warehouse until transportation could be procured. These trains consisted of from three to thirty wagons, each of which would load from two to four tons. Two of these wagons were coupled together, to the front one were hitched from ten to fifteen yoke of Texan or Mexican steers; these would be driven from eight to twenty miles a day or night, according to load, pasturage or water. This mode of transportation was quite expensive, which, in connection with the charges on the railroad, made freight come high, at times footing up eight dollars per hundred pounds gross, delivered at the door from New York.

New York would never receive more than two orders for goods, amounting to from

eight to twelve hundred dollars each, in one year, while St. Louis would not receive more than three in the same length of time. The price for medicines was not considered so extraordinary, though a prescription always brought four bits (fifty cents) at the lowest, no matter how small, or for what purpose; a four-ounce mixture, a dozen and a half of blue mass and colocynth pills, or a box of Seidlitz powders were considered settled for with six bits (seventy-five cents). Patent medicines, such as Ayer's pills, pain-killer (small), garg'ing oil (small) brought four bits, while the dollar preparations were paid for with one dollar and a half without grumbling. Coal oil sold for one dollar per gallon. Onion seed were worth their weight in gold; the mountaineer put his gold dust on one side of the scale, whatever amount he wanted to invest, and when it was counterpoised with onion seed it was considered he had value received. Even exchange was no robbery. The people were all very liberal in their dealings; ten cent customers were as scarce there as one dollar customers are here; less than ten cents' worth was not sold—ten cents or no charge was the rule.

The druggist and physician was looked upon as a somewhat superior being; his will was done, his word was law. Whenever there was a public meeting or a social gathering, it was not considered complete until the doctor was identified with it in some way. Many a meeting—political or for the organization of a fire company, base ball club, dancing club or church festival—was started in the store, subscriptions and donations received, and tickets sold for one or all, as the case might be. The doctor's name was always on the ticket for coroner; his services in that capacity were frequently called into use after there had been what they called a neck-tie festival. These were generally held after horses had been stolen and the aggressors caught by the Vigilantes.

In all the time that I was in the Far West I do not remember a single instance of a person asking for simply a dose of oil, as it is called here, the article not being put to use in that way.

Strychnia, arsenic, laudanum, or any other poisonous drugs were sold to any one that pleased to buy, and no questions asked. A friend of the doctor's at one time sent him a case of strawberries; these he was to sell for him merely as an experiment. They sold readily at one dollar per quart, and the individuals considered themselves favored at having the chance to buy, there not being enough for all. After that we had California grapes, pears and peaches for sale in their season, which brought six bits and one dollar per pound.

Everything is sold by the pound in that country, excepting eggs, liquids and dry goods. Water was sold at that time at two bits (twenty-five cents) per barrel, and was delivered from a tank on wheels or by placing a barrel on the forked branches of a tree, drawing it to the river by horse, filling and drawing back to place. This water was generally very muddy, and had to be allowed to settle or else be clarified by adding alum, before it could be used for ordinary purposes; the water obtained from wells being entirely unfit for use, as it is very alkaline.

The class of people we had to deal with were as various as were their wants, they coming from all parts of the country, Texas, New Mexico or the Colony, passing through our town on their way to the mines, and as a matter of necessity

would stop and replenish their stock of medicines, this being the only drug store within seventy-five miles or more around. All owners of sheep, horse and cattle ranches were purchasers of large quantities of medicines for both man and beast. The Indians and Mexicans would come, complaining of being muncho mala (very sick). If we took pity on poor Lo, and gave him a Seidlitz powder in separate doses until the froth came out of his mouth, he thought it a good joke, and would go off and return with another buck, who would likewise complain of being sick, and when treated in the same way would go and do likewise; and so on until the thing became monotonous. The Indians also frequently came to swap (trade) furs, pelts, skins and robes for paint; these in turn we would sell for cash. The Mexicans' wants were generally limited to blue ointment, agua dienta (whiskey), medicena per granis (medicine for itch), or pietra infernal (nitrate of silver). The arrival of a soda fountain and generator for the drug store created quite an excitement, and on the day the charging of the fountain for the first time took place there were a considerable number of spectators standing around the back of the store, where the performance was going on. As none of us had ever charged a fountain before, we made quite an awkward piece of business of it, and when the pipes got choked up with marble dust, necessitating our taking off one of the nuts, the marble dust and water were blown out with such violence that an alarm was given that the place had blown up, and a general stampede resulted. After we succeeded in making the soda water, we for several reasons found ready sale for it at fifteen cents per glass, or two bits a glass with a stick in it. The ice for our use we had stored ourselves, or, when such was not the case, bought and paid at the rate of three dollars per hundred pounds for the same.

Things were not alone in this shape in Pueblo, but Denver, the largest city in Colorado, had but little to boast of. With the coming of the railroad, things changed; goods could be had on quicker time and much cheaper, and a gradual improvement in the conducting of the drug business was noticeable. Whereas heretofore the proprietor's formula book had ruled supreme, it was now replaced by the United States Pharmacopœia, and preparations that were heretofore bought in the East we now prepared according to its directions. Prescriptions began to take the place of patent medicines, other physicians having located in the meantime. Goods not proper to the drug store were discarded as opportunities would permit, and replaced by a more complete stock of drugs. At the present time the drug business is carried on in a more legitimate manner in Colorado than in many of the Eastern States. Druggists get a good price for what they sell, and can afford to sell a good and pure article at the price, and such is the intention of the average druggist; when he fails to do so, it is in ignorance and not knowingly that the fraud is committed.

In no other part of the country can a thorough druggist and pharmacist apply his knowledge and ability to so good an advantage as in the Far West. There he has no wholesale stores at hand to send to, where he can get whatever he happens to want on the spur of the moment, but is thrown on his own resources and ability to manufacture.

VARIETIES.

Viburnum Prunifolium (*Black Haw*). E. W. Jenks, M.D. ("Gynæcological Transactions," 1876).—This remedy, used by the writer almost daily for several years, warrants him in speaking confidently in regard to results obtained from its use. Its most frequent use has been as a prophylactic against abortion. Of course the remedy is worthless when the abortion has already begun by detachment of the ovum. Where the habit of abortion has been formed the viburnum may be given in the form of the fluid extract from a half teaspoonful to a teaspoonful, four times a day, beginning two days before the regular menstrual date, and continuing it two days longer than the usual menstrual flow. In dysmenorrhœa with profuse menstruation and pain, except when the pain is due to stenosis or mechanical destruction, viburnum affords the patient great relief. The remedy should be given for several days in advance of the period, as well as during the time of the flow.

In spasmodic or neuralgic dysmenorrhœa it is not sufficient alone to give relief, but may be given with advantage combined with sedatives and antispasmodic remedies, such as cannabis Indica, camphor, hyoscyamus, and conium. In that form of dysmenorrhœa with menorrhagia, caused by fibroid growths, it has been given in combination with ergot, with gratifying results. The writer would designate viburnum prunifolium as a uterine sedative, whose action is as pronounced as is that of ergot in causing uterine contraction.

The form of the viburnum used is the fluid extract made from the bark of the root and bark of young shrubs, and newly-grown twigs. The dose is a half drachm to a drachm, repeated every two to six hours.—*Chicago Med. Jour. and Exam.*, Oct.

True Rhubarb.—The examination by Mr. E. M. Holmes of the root of *Rheum officinale*, grown at Banbury, does not confirm the view that it may be accepted as the true source of the Russian rhubarb of commerce. A plant three years old was dug up; the rootstocks, being trimmed, weighed on an average about $8\frac{1}{4}$ lbs, the central one 10 lbs. "When the outer portion was carefully sliced off (writes Mr. Holmes) in different parts of the rootstock and root, it *nowhere* presented the appearance characteristic of the true Russian rhubarb." On slicing the meditullium in like manner, there was no trace of the network which forms a marked characteristic of Russian rhubarb, and the following points of difference were observed: "The transverse section of the rootstock also is not so finely grained, and although it is marked with many stellate spots the markings are much larger and bolder than those of Russian rhubarb and, in fact, approach more nearly to the markings of English rhubarb. The sections of the true roots present only a radiate structure, without any stellate markings. In my opinion, the Russian root is produced by a plant which has a much less rapid growth than the noble *Rheum officinale*, Baill."—Sept. 8, 1877. From the above it would appear that the question has not been so definitely settled as some writers have supposed. The root forwarded to the late Daniel Hanbury, claiming to be a specimen of the true source of Russian rhubarb, was not that of *Rheum officinale*. Unfortumately, it arrived too late to be subjected to his admirable powers of investigation.—*Chem. and Drug.*, Sept. 15th, 1877.

MINUTES OF THE COLLEGE.

PHILADELPHIA, SEPTEMBER 24th, 1877.

The semi-annual meeting of the Philadelphia College of Pharmacy was held this day at the College Hall, No. 145 North Tenth street. Dillwyn Parrish, President, in the chair. Twenty-eight members present.

The minutes of the last meeting were read, and, on motion, approved.

The minutes of the Board of Trustees since the last stated meeting of the College were also read by the Secretary of the Board, and, on motion, adopted.

These minutes show that in July last a report was received, and adopted, from a

committee previously appointed by the board to consider and mature a plan for the representation of this College at the International Exposition, at Paris, in 1878.

The committee state "that they have selected nearly two hundred drugs, which are used more or less in the United States, and are derived from plants indigenous or naturalized in this country, but not found in Europe. These are deemed as very well adapted for exhibition. The committee propose to obtain for the purpose suitable receptacles for the specimens, and suggest that the whole collection be exhibited in Paris in 1878."

"The Committee propose to put up similar collections in the same style, with the view of presenting them to other societies for the purpose of exchange, and to some institutions where it is believed they will be acceptable and well cared for. The following societies and institutions have thus far been considered in connection with this plan. Pharmaceutical Society of Great Britain; Apothecaries' Society, at Berlin; Escuela de Farmacia (Prof. Herrera), Mexico; Apothecaries' Society, at Vienna; Pharmaceutical Institute (Prof. Flückiger), Strasburg; University of Tokio, Japan (Dr. Nagayo); Pharmaceutical Institute (Prof. Dragendorff), Dorpat."

"The committee further propose that the College enter into correspondence with the following gentlemen and societies:

"Theodore Peckolt, Rio de Janeiro (Brazil); Dr. Gastinel Bey, Cairo (Egypt); Prof. X. Landerer, Athens (Greece); Prof. Dymock, Calcutta (India); Joseph Bosisto, Richmond, Melbourne (Victoria); and Sociendad de Farmacia Argentina, Buenos Ayres; requesting from each a collection of drugs indigenous to or peculiar to his country, and offering to exchange American drugs for such collections. The committee would state that the three gentlemen first named are corresponding or honorary members of the College, and they believe that the others would willingly further the object of the College."

The subject under consideration at the last meeting relative to the exemption of all members of the College, of twenty-five years standing, from their annual contributions, and which was laid over under the rules, was again considered and discussed. Messrs. Bullock and Maisch advocated the adoption of the report of the committee, including the proposed amendment to the By-Laws. Other members coinciding in the measure, a motion was made to adopt the report of the committee, which was unanimously agreed to. By this action, the amended By-Law of the College will hereafter read as follows:

Chapter VIII, Article III. Members may reside in any part of the United States, and, upon election, shall pay an initiation fee of five dollars, and thereafter a contribution of five dollars annually, in advance, until the expiration of twenty-five years, when their annual contributions shall cease.

The President, in conformity with the resolution passed at the last meeting, announced the committee selected by the officers to revise the United States Pharmacopœia, as follows:

To the Philadelphia College of Pharmacy:

The committee appointed to select eighteen members of the College to take in charge the subject of the United States Pharmacopœia for its decennial revision in 1880, addressed a circular to such members as they deemed suitable for the service, and have received acceptances from the following gentlemen: Thomas S. Wiegand, Alfred B. Taylor, Joseph P. Remington, Israel J. Grahame, Wallace Procter, Edward Gaillard, William C. Bakes, John M. Maisch, William B. Webb, Robert F. Fairthorne, James T.

Shinn, Charles L. Mitchell, Charles C. C. Spannagel, Howard G. Jones, Alonzo Robbins, Samuel Campbell, Dr. A. W. Miller, Samuel S. Bunting.

Signed, DILLWYN PARRISH,
Chairman of Committee.

Philadelphia, Ninth mo. 24, 1877.

The members of the committee were all present, and accepted the trust confided to them.

Professor Remington moved that the name of Charles Bullock be added to the committee, which, meeting with the approval of the meeting, he was unanimously appointed to the service.

In the absence of Dr. Pile, Dr. A. W. Miller, on behalf of the delegates to the American Pharmaceutical Association, which met in Toronto, in September last, made the following report:

To the Philadelphia College of Pharmacy:

The delegates appointed to attend the meeting of the American Pharmaceutical Association at Toronto, Ontario, respectfnlly report that they were present on that occasion, and participated in the interesting discussions. The sessions were held in the City Council Chamber of Toronto at the appointed time, this being the first occasion on which the American Pharmaceutical Association has stepped beyond the boundaries of the United States. There was even more than the ordinary degree of interest attached to the meeting.

We can all bear testimony to the generous hospitality and uniform courtesy of our Canadian members and friends. We were invited to and shown through the Toronto University, which is said to be the finest specimen of Norman Gothic architecture on this continent. A very enjoyable *conversazione* was also provided for the visitors and their ladies at the rooms of the Educational Department, during which choice songs were interspersed with impromptu addresses, with the inspection of the rich storehouses of the appliances for teaching, and with the partaking of refreshments. In accordance with good old English custom, we united, at the conclusion, in hearty cheers "for a most estimable lady, Queen Victoria." The ceremonies were efficiently conducted by William Elliot, President of the Ontario College of Pharmacy.

A majority of the members visited many places of interest on the journey to Toronto, as well as on the return trip, embracing Watkins' and Havana Glens, Rochester, Niagara Falls, Montreal, Quebec, Lake George, Saratoga and Albany. The journeys over Lake Ontario will be memorable events with most of our companions, on account of the peculiar associations connected therewith.

The meetings were graced by the presence of several of our elder and most highly esteemed members, among them Dr. Squibb, Prof. Israel, J. Grahame and others. There was a very fair attendance throughout, though there were, perhaps, not as many new members elected from the immediate vicinity of the place of meeting as usual. Quite a number of interesting and valuable papers were read and discussed during the various sessions.

The following new officers were elected to serve during the ensuing year: William Saunders, of London, Ontario, as President; Ewen McIntyre, of New York, as First Vice President; John Ingalls, of Macon, Ga, as Second Vice President. Atlanta, Georgia, was chosen as the locality for the next annual meeting.

In conclusion, we are grieved to report the very sad misfortune which befel our honored Chairman, Dr. Wilson H. Pile After having actively participated in the session on Thursday afternoon, he was suddenly affected by hemiplegia, shortly after midnight, the paralysis extending to the entire left side of his body. At the latest accounts he is very slowly improving, so that he will probably soon be able to endure the fatigues of the homeward journey. Respectfully submitted,

ADOLPH W. MILLER,
on behalf of the delegates

September 24th, 1877.

Prof. Maisch, Chairman of the delegation to attend the conference of the various Schools of Pharmacy, held at the some time and place, made the following report:

To the Philadelphia College of Pharmacy:

The undersigned delegates beg leave to present the following report:

The eighth Conference of Schools of Pharmacy was held in the Rossin House, Toronto, Ont., on the morning of September 4 and on the evening of September 6, 1877, delegates being present from the Philadelphia, New York, Massachusetts and Louisville Colleges of Pharmacy. Mr. A. E. Ebert was invited to represent the Chicago and Mr. E. Eareckson to act for the Maryland College of Pharmacy,

from which institutions credentials had failed to reach the Conference. The officers of the preceding year were re-elected, Mr. Chas. A. Tufts president and John M. Maisch secretary.

The subjects for discussion, prepared by the Colleges of New York and California, referred to regulations concerning the admission of students, examinations and requirements for graduation, with the view of making them as uniform as possible in *all* the Colleges. The various propositions were freely discussed, and afterwards adopted in the following form, the votes being in nearly all cases unanimous:

1. The matriculation and lecture tickets shall be taken out by each student in person, and must be endorsed, the former within fifteen, the latter within thirty days, from the beginning of the lecture course.

2. One course of lectures attended at another recognized College of Pharmacy or corresponding institution where the same branches are taught—there being no regular College of Pharmacy in the same locality—shall be accepted as such, but the last course shall always be taken at the College where the student intends to graduate.

3. At the time of the final examination for the degree of Graduate in Pharmacy the candidate must have had at least three and a half years' practical experience; but he shall not receive his diploma until he shall have completed the term of four years' service.

4. Candidates for graduation shall be subjected to a written or oral and a practical examination.

a. The examination shall embrace questions in theoretical and pharmaceutical Chemistry, Botany, Pharmacognosy and Materia Medica, a knowledge of the U. S. Pharmacopœia, of the various systems of weights and measures, of the maximum doses of powerful remedial agents, of the antidotes to poisons, and the translation of Latin prescriptions.

b. The practical examination should comprise the analysis as to identity and purity of simple medicinal chemicals, the actual compounding of prescriptions requiring skill and judgment, the identification of specimens in the several departments, and the making of chemical and pharmaceutical preparations.

5. No special examinations shall be held, but only one regular examination at the end of the regular course.

6. Candidates must present an original thesis, written in English, and also pass their examination in English.

7. Certificates will be granted to all candidates under twenty-one years of age who have passed a satisfactory examination, setting forth this fact. On producing evidence that they have complied with all the requirements as to time of service and age, they shall receive their diploma as Graduates in Pharmacy.

A proposition, fixing the percentage of merit marks obtainable as necessary for graduation, was indefinitely postponed as being impracticable; but it was agreed that examination papers from the various Colleges be selected for comparison at the next annual Conference, to ascertain the views and judgment of the examiners as to the requisite knowledge for passing and rating the candidates. The Philadelphia College was requested to make suggestions to the other Colleges.

The Colleges of Massachusetts and St. Louis were selected to prepare questions for discussion at the next Conference.

The ninth Conference of the Schools of Pharmacy will convene at Atlanta, Ga., September 3, 1878, at 10 oclock A. M., preceding the first session of the American Pharmaceutical Association.

Respectfully submitted,

JOHN M. MAISCH.
JOSEPH P. REMINGTON.
CHARLES BULLOCK.

Mr. Bullock presented a photograph of William Elliot, President of the Ontario College of Pharmacy, which was accepted with thanks.

Professor Maisch called the attention of members to the death of Hugh A. Weddell, M. D., an honorary member of the College, which occurred at Poitiers, France, July 22d, 1877. In his remarks Professor Maisch alluded to his services as an author, and to his botanical investigations of the Cinchonas, the substance of which remarks will be found in an obituary notice on page 528, of this volume.

This being the semi-annual meeting, an election for eight trustees and a committee of three on deceased members was ordered. E. M. Boring and Charles L. Mitchell, acting as tellers, reported the following gentlemen elected to the respective positions, viz.:

Trustees—Dr. Wilson H. Pile, William C. Bakes, William McIntyre, Albert P. Brown, Edward C. Jones, Richard V. Mattison, Robert England, Dr. A. W. Miller.

Committee on Deceased Members—Charles Bullock, Alfred B. Taylor, Joseph P. Remington.

There being no further business, on motion, adjourned.

WILLIAM J. JENKS, *Secretary*.

MINUTES OF THE PHARMACEUTICAL MEETING.

Pursuant to notice, the first pharmaceutical meeting of the session was held October 16, 1877, and organized by calling Vice President Chas. Bullock to the chair, when the meeting elected T. S. Wiegand Registrar.

Prof. Maisch moved a vote of thanks to Mr. McIntrye for his long and very satisfactory services as Registrar; the motion was carried unanimously.

In order to render these meetings more generally useful by uniting all classes of the trade, it was recommended that the Registrar should notify all druggists and apothecaries in the city of the time and place of their occurrence.

The reading of the minutes of the previous meeting (May last) was, on motion, dispensed with.

Prof. Maisch presented, on behalf of the Smithsonian Institute, the report of the regents for the year 1876, also, from Mr. J. J. Brown, of Oakland, Cal., a graduate of the college, a pair of bulbs of the Chlorogalum pomeridianum, Amolia, the California soap-root, remarkable for the large percentage of saponin which it is said to contain, as also for a peculiar mucilage; these two constituents caused the Indians and early Spanish settlers to esteem it very highly as a detergent; and so efficient and harmless it is that it is still preferred for washing laces, embroideries and such like fabrics, to any soap attainable. A cold infusion of the bulb may be used in place of soap as a dentifrice, a shampoo liquid, and a valuable lotion for both face and hands. But little use has been made of it in medicine, although it is claimed to have some virtue when employed as a lotion to ulcers and in skin diseases; the fibres have been separated from the bulbs, by the Chinese, washed, dried and put in the market for making *hair* mattresses. The plant grows abundantly upon the dry hillsides of the Pacific coast, from Oregon to Central America, and perhaps further south; but as its flowers open at night time Mr. Brown has not been able to obtain them.

Mr. R. V. Mattison presented to the notice of the meeeting a suppository mould from Messrs. Benton, Myers & Co., of Cleveland, Ohio; the price at which the moulds are sold is $8, but the weight of the suppositories, made with them, is only about twenty grains for the large, and twelve for the small size; this forms an objection, as the Pharmacopœia directs suppositories to weigh thirty grains, which was regarded by several members more than necessary and desirable. The cold process, forcing the mixed material into the moulds, thus saving time and securing uniform division, was regarded by some as preferable to mixing while heated. Prof. Remington recommended Blackman's mould on occount of the economy of ice.

Mr. L. R. Carbonel, a graduate of the college, presented through Prof. Remington, several pods of the Theobroma cacao, the seed vessels of Bixa orellana, from which plant anatto is obtained; and some seeds of the Castor Oil plant, cultivated in Cuba. Also specimens of a plant, which Prof. Maisch stated to be an Eupatorium, and which is used is Cuba both as a purgative and emetic; for the first purpose in about 30 grain doses, and double as much for an emetic.

On behalf of Mr. Neppach, a student of the college, Prof. Maisch presented a specimen of genuine Oregon Balsam of Fir, which is probably the product of Abies menziesii, *Lindley*, a tree growing from Sitka to California and Colorado, and generally known under the name of *balsam*. The factitious so-called Oregon balsam of fir, which was described by Prof. Maisch before ("Amer. Jour. Phar.," 1874, p. 106), was exhibited alongside of the genuine article, and observed to be of a darker color and a terebinthinous taste, while the new article resembled Canada balsam in color and transparency, and had an agreeable, somewhat different aromatic odor. Mr. Neppach stated that the oleoresin brought by him was not an article of commerce in Oregon, where balsam of fir was procured from the eastern section of the continent; but having noticed the statement of Prof. Maisch in 1874, he obtained the sample in Oregon by puncturing the small vesicles which formed on the bark of the balsam tree of the Pacific coast. Several members who had recently visited Canada described the formation of these balsam vesicles on the trunks of Abies balsamea, and the manner of obtaining the oleoresin, as reported by Mr. Wm. Saunders at the recent meeting of the American Pharmaceutical Association.

Mr. Bullock presented samples of Goa powder and chrysophanic acid which have attracted a good deal of attention in Europe for the last year, and have been largely used and with success in treating cutaneous affections, combined sometimes with an alkali and sometimes with acetic acid. He read a paper on this subject (see page 545), which was a summary of the literature, both pharmaceutic and medicinal, and was referred to the Publishing Committee.

Prof. Remington read a paper by Mr. Henry Trimble (see page 536) upon the use of chlorine water and ammonia as a color test for estimating quinia. Prof. Maisch said that he was glad Mr. Trimble had not overlooked the fact that quinidia produced a very similar reaction, and then commented on the common statement, that the presence of chlorohydric acid prevented the appearance of the green coloration, which he stated to be erroneous, the point necessary to a successful result being the presence of sufficient chlorine before the ammonia is added.

Mr. Boring called attention to samples of caraway, the want of flavor of which first called attention to its inferiority; when sieved about 38 per cent. of very small and immature fruits, almost devoid of taste, were separated, the remainder being better, but still inferior to an unobjectionable article; the same remark applies to most of the anise now offered for sale.

Professor Remington read a communication from Mr. Fox, relating to greater uniformity of charges for presciptions, and to the propriety of pharmaceutists adopting a uniform mark for valuation. After some discussion, a motion by Israel J. Grahame prevailed—that it was inexpedient to take any action upon it.

Mr. Bullock called attention to two samples of heavy powders sent him by a

gentleman prospecting in Nevada, one of which proved to consist of quartz, aluminous earth and iron, the other of the sulphates of iron and alumina, entirely soluble in water, and most likely a product from the decomposition and oxidation of the first-mentioned mineral. The finder, judging from the weight of the material, thought it might prove to be a source of supply for some of the precious metals, in which opinion he was of course disappointed.

There being no further business, on motion, adjourned.

T. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The Colleges of Pharmacy, so far as they have been heard from, have all large classes, and in several, if not in all, the number of students is in advance of former years. In the Philadelphia College it became necessary to provide additional accommodations, by putting into the lecture rooms another row of benches. We also learn that laboratory instruction is sought by a larger number than heretofore, and that many will avail themselves of the practical instruction in pharmaceutical manipulation, as organized for the present session in Philadelphia.

Social Meeting of the Alumni Association of the Philadelphia College of Pharmacy.—The second series of these meetings was inaugurated October 4th, 1877, by President Mattison, who, in an address of welcome to the forty odd members present, explained their objects, and what it was hoped would be accomplished by them.

The committee appointed to furnish matter for discussion reported through Messrs. Kennedy and Trimble, the former introducing the subject of aloes, and giving some interesting facts in connection with its extraction with hot and cold water, and the relative efficacy of the products. The latter gentleman read a paper on Nitric Acid (see page 537), in which a method of increasing its strength for use in the process for gun cotton was described. He also offered for the inspection of the students a number of specimens.

A paper read by the president, entitled "What to Study and How to Study it," was listened to with attention by the meeting, which, on motion, then adjourned to meet November 1st, 1877.

WALLACE PROCTER, *Secretary.*

EDITORIAL DEPARTMENT.

The excursions to and from Toronto, on the occasion of the last meeting of the American Pharmaceutical Association, have been so pleasant that they will be long remembered by those who participated in them. The routes led through a section of the continent which, in point of natural beauties and picturesque scenes, has few rivals.

Wednesday, August 29th, a party left Philadelphia by way of Harrisburg and Williamsport, being joined by others on the route, which led up along the Susquehannah and over northern branches of the Alleghanies into that beautiful valley into which Havana and Watkins' Glens open, and where Seneca Lake spreads its silvery sheet of water. After a day's travel the comfortable quarters of the Glen Mountain House, located on the cliff near one of the numerous cascades of Watkins' Glen, were reached. The clear weather favored the evening and early morning promenades to the neighboring points, from which delightful views are obtained, and the exploration of the winding gorges and circular basins of Watkins' Glen, and the abrupt and angular turns of Havana Glen. Earlier than originally contemplated, the party left this pleasant retreat on Friday noon to make room for other guests, and, after a charming sail on Lake Seneca to Geneva, took the railroad to Rochester, where their fellow-member, Mr. G. H. Haas, showed them the most friendly attentions, and enabled them to see as much as possible of that thriving and beautiful city.

Niagara Falls and the headquarters at the Cataract House were reached on Saturday afternoon, and during the following night the party was joined by others from various sections, among them a large party who had left New York on Thursday and Friday, and traveling up the Delaware valley and down the upper course of the north branch of the Susquehannah, had stopped at Watkins. The early risers a Niagara were rewarded with the sight of a clear sky, and a beautiful, ever changing rainbow rising high up above the mist of the mighty Fall. Later in the forenoon, Prospect Point was a favorite station of observation to view the rainbows, which fluttered in the gorge of Niagara River through the spray below the Falls, and throughout Sunday and Monday numerous expeditions were undertaken to the various points of interest in the neighborhood.

The members who had business to attend to at Toronto on Tuesday before the opening of the sessions left Niagara Falls on Monday, reaching Toronto by steamer after a sail across Lake Ontario, which to some was rendered less delightful than it would otherwise have been, by sea sickness, the effects of which were soon forgotten in the hospitable halls of the Rossin House, where the headquarters had been established, and where on Tuesday they were followed by the majority of the visiting members with their ladies.

The pharmacists and druggists of Ontario had very thoughtfully planned a series of entertainments, which were as liberal on their part as they were pleasing to the recipients thereof. On Tuesday forenoon they invited the visitors who had arrived, and most of whom were, by their duties, subsequently deprived of the opportunity of seeing the city, to a drive to the most important public institutions, which were afterwards also visited by the other visitors. On Wednesday evening, September 5th, a very pleasant entertainment was tendered to the Association by their Ontario friends in the Normal School buildings, where they had an opportunity of examining the liberal collections of scientific instruments, works of art, and other means of instruction, and, aside from the refreshments, were treated to an excellent vocal and instrumental concert, highly enjoyed by all. The buildings and grounds had been kindly opened for the purpose by the Department of Education of the province of Ontario.

After the adjournment of the Association, most of the visitors left Toronto on Friday afternoon for the St. Lawrence River and Montreal, but a goodly number availed themselves of the opportunity afforded them by their Canadian brethren to visit one of the most picturesque sections of their country, the primæval beauty of which has scarcely been interfered with by the axe of the settler. Traveling by rail along Lake Simcoe and several smaller lakes, the party left the cars at Gravenhurst and embarked on a steamer which carried them over Lakes Muskoka and Rosseau, at the northern end of which they obtained very fair accommodations at the Rosseau House. Both lakes, but more particularly the former, are bestudded with hundreds of rocky and densely wooded islands, nearly all of which are uninhabited; it occurs rarely that the smoke from a chimney or a camp-fire is observed, or that the stillness is broken by busy scenes on the shore. But the view changes continually, and the dark-colored but transparent waters reflect like perfect mirrors all surrounding objects and at night the stars, which glisten and twinkle with great beauty through the clear atmosphere. Muskoka and Shadow rivers were particularly admired for the perfect reflection of the multitudinous forms and colors of the shrubs and trees, which, decked with their autumnal foliage, lined the shores.

After some days of rest in this highland and lake region, the party returned to Toronto and followed those who had preceded them, by steamer down Lake Ontario and the St. Lawrence River, past the Thousand Islands, and through the several rapids to Montreal, and some further on to Quebec. Leaving Montreal, Lakes Champlain and George, with their elegant surroundings, were reached. Saratoga and Albany were visited, and on the trip down the Hudson and past the Catskill Mountains the romantic scenery of the highlands was admired, and the excursionists returned to their homes, hoping for a similar reunion on the occasion of the next annual meeting.

During the entire trip nothing had occured to mar the pleasure, except the serious illness of Dr. W. H. Pile, which kept him confined to his bed at the Rossin House, Toronto, until two weeks ago he had so far recovered from an attack of paralysis, as to be able to bear the fatigue of the journey to his home in Philadelphia, where we are pleased to state he is gradually improving. Another member, who with his family heartily enjoyed the excursion, Ashel Boyden, of Boston, we are sorry to learn, has unexpectedly departed this life.

The Preliminary Revision of the United States Pharmaopœia.—As the period is drawing near when the decennial convention, for the revision of the pharmacopœia, is to meet, the various societies who are interested in that work are making preparations for collecting suggestions of improvement. Heretofore there has been little uniformity in preparing these suggestions for the proper use of the Committee of Revision; not unfrequently, they were very fragmentary and sometimes consisted merely of references to articles published in various journals. To be really useful for the purpose for which they are intended, they should be presented in a form designed for transfering them to the pages of the pharmacopœia, which would very materially facilitate their comparison with others of a similar nature, particu-

larly, if the reasons for the suggestions or propositions were briefly stated. If worked out in such a manner, such a preliminary revision must necessarily embrace the entire pharmacopœia, and to make it thus complete should be the aim of every society, as it has been done heretofore by a few only, and as it has been contemplated by the American Pharmaceutical Association at the last meeting in the appointment of a pharmacopœia committee. The fact that its members are scattered throughout the country, places this committee at a great disadvantage, since they can meet but very rarely, and the intercourse of most of them must necessarily be by letter. Its labors, however, may be materially lightened by the local organizations, if they will likewise go actively to work at the preliminary revision and remain in communication with each other and with the committee of the national association, exchanging views on the general principles which should be observed in the new pharmacopœia, and on the changes in the processes which appear advisable.

The special committee appointed by the Philadelphia College of Pharmacy has organized by electing Mr. A. B. Taylor chairman and Mr. Wm. C. Bakes secretary, and commenced the work in earnest. The committee of the American Pharmaceutical Association, of which Mr. Chas. Rice, of New York, is chairman, has also taken steps, and the latter has issued a circular, inviting attention to the general principles proposed to be followed in reviewing the pharmacopœia, and which may be briefly stated as follows:

1. To abolish the present division into a primary and secondary list and preparations, and to arrange all articles in *one* alphabetical order only, whereby such natural groups as Aquæ, Extracta, Pilulæ, etc., would be retained.

2. To have the Pharmacopœia too full rather than deficient, and to propose a list of remedies to be discarded.

3. To propose crude drugs, chemicals and pharmaceuticals for admission.

4. To add to all crude drugs concise descriptions, and to notice common admixtures or sophistications; also to accompany the botanical name of each plant with the name of the botanist and of the natural order.

5. To describe chemicals and define them by tests of identity and purity, and to give processes only where differences of preparation may produce different results.

6. To express temperature by degrees of both Centigrade and Fahrenheit.

7. To give the formulas and atomic weights of chemicals.

8. To abandon measures of capacity, and express all quantities in parts by weight only.

9. To give for all officinal articles the average single and daily adult dose, and when of peculiar effect upon infants, also the maximum dose for infants.

10. To introduce tables of the maximum doses of powerful remedies; of poisons and antidotes; of solubilities in water and alcohol; of specific gravities of alcohol and other liquids; of volumetric and other reagents; of the relationship between weight and measure of all officinal liquids; of the chief constituents of important mineral waters; of the relative strength of powerful galenicals as recognized by foreign Pharmacopœias used in this country, and of the differences in strength as made by the present and revised Pharmacopœia.

It is hoped that the pharmaceutical and medical societies will discuss these and other points which may occur to them, and cause their suggestions and criticisms to be communicated to others, or to confer with other bodies having the same interest at heart. The latter course has already been inaugurated in Philadelphia.

Corrections.—In the last number (p. 517) we expressed our regret that Dr. C. A. Robbins had not exhibited at the meeting of the American Pharmaceutical Association a sample of *veratridia* isolated by him from the rhizome named. We have since learned that a sample was on exhibition, but we failed to see it.

On page 508, second line from top, read "and in other parts of *Eastern* (instead of Western) Brazil."

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Medicinal Plants; being Descriptions with Original Figures, etc. By Robert Bentley, F.L.S., and Henry Trimen, M.B., F.L.S. Philadelphia: Lindsay & Blakiston. 4to. Price $2 per part.

Of this valuable work, with its handsomely executed plates and complete descriptions, we have now before us part 19, containing Cassia obovata, C. acutifolia, C. angustifolia, Cornus florida, Arnica montana, Colchicum autumnale and Gelsemium sempervirens. Part 22 contains Anthemis nobilis, Arachis hypogæa, Ipomœa Nil (the kaladana of India, where the seeds are used as a cathartic), Lolium temulentum (darnel), Mentha pulegium (the European pennyroyal), Sambucus nigra and Zea Mays. In part 23 we find Anacyclus officinarum (German pellitory), Andrographis paniculata (maha-tita of Bengal, used as a tonic), Cannabis sativa, Cimicifuga racemosa, Maranta arundinacea, Sesamum indicum and Toluifera balsamum.

An Index of Diseases and their Treatment. By Thos. H. Tanner, M.D. Second edition. Revised by W. H. Broadbent, M.D., Fellow of the Royal College of Physicians. Philadelphia: Lindsay & Blakiston, 1877. 8vo, pp. 432. Price, cloth, $3.

The volume being intended as a ready reference book, for the practising physician, convenience for consulting it has been the aim and carried out in its alphabetical arrangement. The first thirty pages are occupied by a tabular synopsis in which the groups of diseases are alphabetically arranged, and under each group the diseases belonging to it, enumerated with references to the text. The following 250 pages contain the "Index" proper. In each case the name of the disease is followed by the etymological derivation of its name, and by brief and practical accounts of the causes, symptoms, varieties and treatment. The remainder of the work consists of an "Appendix of Formulæ," which have been reprinted from the last edition of the author's "Practice of Medicine," and which, among others, include, also, a lengthy chapter on "Climates for Invalids," and one on "Mineral Waters." The editor has left the plan as designed by the author, but has carefully revised each section, to incorporate new knowledge and to render diagnosis more definite.

The Physician's Visiting List for 1878. Philadelphia: Lindsay & Blakiston.

This is the twenty-seventh year of the publication of this visiting list, a fact which speaks for its convenience and usefulness. It is gotten up in the usual good style.

Practical Hints on the Selection and Use of the Microscope. By John Phin, Editor of the "American Journal of Microscopy." Second edition. New York: The Industrial Publication Company, 1877. 12mo, pp. 181. Price, cloth, 75 cents.

Two years ago we noticed the first edition of this little work, and we now welcome the second, which is considerably enlarged, and contains numerous woodcuts, among them three or four of microscopes of as many manufacturers, in order to explain some of the devices. Intended for beginners, the little work will serve its purpose well as expressed in its title.

Outlines of Modern Chemistry, Organic; based in part upon Richel's "Manuel de Chimie." By C. Gilbert Wheeler, Professor of Chemistry in the University of Chicago. Chicago: Jansen, McClurg & Co., 1877. 12mo, pp. 231.

This little work is intended as an introduction into organic chemistry. Its arrangement is quite convenient for the beginner; but though it was apparently in part intended for the use of medical and pharmaceutical students, the information given is in many cases scarcely sufficient or accurate enough. Thus, opium is stated to be obtained from the *seeds* of the poppy; Veratria sabadillia and colchinia (?) are enumerated as constituents of Veratrum album besides jervia, while the occurrence of veratria in sabadilla seed is not mentioned, or of jervia in our Veratrum viride. Digitalin, picrotoxin and cantharidin are classed with the alkaloids, and the interesting alkaloids berberina, sanguinarina, etc., are not even mentioned.

Distribution des Prix aux Elèves internes en Pharmacie des Hôpitaux. Paris, 1877. Pp. 30.

Distribution of Prizes to the Pharmaceutical Intern Students of the Paris Hospitals.

We are indebted to Mr. Stan. Martin for a copy of this pamphlet.

OBITUARY.

Ashel Boyden died at his residence, in Boston, October 22d. He was born in Walpole, Mass., October 31st, 1810, learned the apothecary business at Medford and began business with his brother Arnold in 1830 in a locality now occupied by the Cochituate water reservoir, and in the vicinity of his last store. He was devoted to the business of his choice, and an earnest advocate of pharmaceutical progress. He was a member and for some time President of the Massachusetts College of Pharmacy, joined the American Pharmaceutical Association at its first annual meeting, in 1853, served one term as its treasurer, and for a number of years has been a faithful attendant at its annual meetings, where his kind disposition secured for him numerous friends. The deceased leaves a widow and three children.

THE AMERICAN
JOURNAL OF PHARMACY.

DECEMBER, 1877.

RESINA PODOPHYLLI.

By G. H. Chas. Klie.

Resin of podophyllum is prepared, according to the U. S. Pharmacopœia, by exhausting 16 troyounces of pulverized podophyllum root with alcohol until 24 fluidounces have been obtained. After concentration of this to 6 fluidounces it is, with constant stirring, poured into a mixture of 7 pints of water and 2 drachms of muriatic acid. The sediment, after washing twice by decantation, is gathered on a strainer, expressed, and dried by a moderate warmth. The eclectic dispensatory has this preparation made by adding one pint of strong tincture of mandrake root to one gallon of water acidulated with 18 fluidrachms of hydrochloric acid, washing the precipitate on a filter, and drying in a warm place of 80° to 85° F. It goes on to say: "This resin has also been obtained by precipitation without heat by adding a solution of alum to a saturated tincture of the root, but by this process all the resin is not obtained." The only practical difference between the U. S. Pharmacopœia formula and that of the eclectic dispensatory is that the former directs a certain quantity of the root to be exhausted, whereas the latter gives free scope to the operator to consider a tincture strong whether made with 8, 12 or 16 ounces of the root.

Having prepared the resin several times according to the Pharmacopœia's directions, and having found the product very small each time, I was induced to try different strengths of alcohol, from dilute upwards, and also different mixtures for precipitation, to ascertain what alcohol and precipitating mixture would give the largest yield. The result is given in the table below. In all operations percolation was carried on until 1½ pints of tincture had been obtained; the tincture remaining in the mass was displaced by water. This generally increased the percolate to two pints. This was invariably concentrated to 8 fluidounces,

regaining the alcohol by distillation. When dilute alcohol had been used for exhaustion, in the subsequent process of concentration the resin would separate and settle on the bottom of the still. It had to be redissolved in alcohol before precipitation. None of the products would be entirely redissolved in alcohol of the same strength as that with which it had been extracted, nor in any other.

16 troyounces of Podophyllum root exhausted with Alcohol.	Precipitated in	Weight of product.	Color of product.
Sp. Gr.		Grs.	
·825	6 drachms muriatic acid to 4 pints water...	236	Like licorice root powder.
·825	½ oz. alumn to 4 pints water..................	223½	Greenish-yellow.
·825	120 minims muriatic acid to 4 pts. water..	222	A trifle lighter than powdered ipecac root.
·825	4 pints water..	223	Like powdered ipecac root.
·930	½ oz. alum to 4 pints water.....................	557	Greenish-yellow.
·938	6 drachms muriatic acid to 4 pints water..	340	Like powdered licorice root.
·938	120 minims muriatic acid to 4 pts. water...	352¾	Brownish-yellow, with a tinge of green.
·938	4 pints water..	352	Somewhat darker than powdered scammony.
·945	½ oz. alum to 4 pints water..................	243½	Like powdered extract of licorice.
·945	80 minims muriatic acid to 4 pints water..	244	A trifle lighter than common emery flour.
·945	4 pints water..	246	Same as foregoing.

This table shows such a large yield for the alcohol of ·930 sp. gr. that it was concluded, making proper allowance for difference in the root and thoroughness of exhaustion, that, by using it for the preparation of the resin, the most satisfactory results would be obtained.

Lowell, N. St. Louis, Mo., Oct, 1877.

AROMATIC SYRUP OF LIQUORICE.

Editor American Journal of Pharmacy:

The following is a recipe for an aromatic syrup of liquorice which possesses such excellent qualities of disguising the taste of sulph. quinia that I think it my duty to communicate the formula to my pharmaceutical brethren:

Take of	Pulverized Extract of Liquorice,	.	4 ounces
	Jamaica Ginger,		
	Cinnamon Bark,	each	2 ounces
	Cloves,	.	1 ounce
	Sugar,	.	60 troyounces
	Water,	.	a sufficient quantity

Reduce the ginger, cinnamon and cloves to a coarse powder and boil in two pints of water over a slow fire for one hour. Then strain and

dissolve in the liquid the pulv. extract of liquorice, with the aid of a gentle heat, stirring to assist the solution. When dissolved add the sugar, keeping up the heat till the latter is also dissolved. Then strain while hot and add hot water through the filter to make four pints of finished syrup.

The above syrup I find to disguise the taste of quinia better than syrup of liquorice root, the aromatic elixir of liquorice or the simple syrup of the extract of liquorice. It will completely cover the taste of 20 grains of quinia sulphate in one ounce of the syrup, and only a slightly bitter taste will be developed ten or fifteen minutes after taking, which, however, may be removed by taking a draught of black coffee with sugar.

This syrup has such a pleasant flavor, and none of the often objectionable sweetness of liquorice, that our physicians who are using it say that they find no trouble at all now in giving quinia in solution to children or to their most delicate patients. A. S.

Tell City, Ind.

REMARKS.—Ginger contains nearly one-fifth of its weight of starch, which must be dissolved by boiling with water, whereby, also, considerable of the volatile oils of the aromatics must be lost. It would seem, therefore, as if the process might be improved. The action of the proposed syrup probably depends upon the tannin of the cinnamon and cloves producing quinia tannate, which is slowly soluble in dilute acids.—EDITOR.

SYRUPUS LACTUCARII.

By A. G. SCHLOTTERBECK.

The query, "What is a good working formula for syrupus lactucarii?" was submitted to the writer by the Cumberland County (Me.) Pharmaceutical Association at its meeting last August, and led to a number of experiments, with the following results: The point to be attained was to produce a clear, transparent preparation, and the question first to be considered, What is the turbidity owing to? Some chemists claim that lactucarium contains a caoutchouc-like principle, and this was thought might prove the cause of our tribulations.

A sample of English lactucarium was selected and macerated in chloroform for ten hours, the chloroform carefully drained off, and the process of the Pharmacopœia pursued. It was observed during the

process that as soon as the alcohol had evaporated, the liquid remaining in the evaporating dish became turbid; the process was therefore continued until only one-half the quantity directed by the Pharmacopœia remained. This, after cooling, was added to an equal quantity of alcohol, which immediately redissolved the precipitated "resin," resulting in a beautiful light-brown solution. The temperature at which the process of evaporation was conducted at no time exceeded 160°F.

At this stage of the process the solution obtained was divided in two equal parts, one of which was mixed with syrup previously heated as the Pharmacopœia directs; the other was added to cold syrup, the resulting preparations both being superior in appearance than the result generally obtained by following strictly the formula of the Pharmacopœia; especially the one in which cold syrup had been employed is nearly perfect in appearance. Both have retained their original state during the six weeks that have passed since first made. The writer does, however, not recommend the employment of chloroform as here used, as it is claimed to dissolve a portion of lactucin, and therefore would reduce the strength of the preparation.

Lactucarium contains, according to several accepted analyses, besides a number of other constituents, pectic, malic, oxalic, citric and other acids. This suggested to the writer the employment of litmus paper to ascertain what reaction the different syrups in his possession would give on the same; three samples were tested, and all gave an acid reaction. It was decided to neutralize this acid condition, and accordingly the most unsightly of all the syrups was selected. This had been prepared several months and was made strictly in accordance with the Pharmacopœia. One drachm of this syrup was diluted with an equal bulk of water, and liquor potassæ was added, ten drops of which sufficed to change the appearance of the syrup from a muddy into a beautiful clear dark-brown preparation, neutral to either blue or red test paper.

Afterwards some of the same syrup was neutralized without being diluted, with the same result. The addition of this alkaline solution changes the taste from an acrid bitter to a sweetish and very slightly alkaline. Whether the alkali is objectionable in the preparation therapeutically is an open question.

The writer is therefore of the opinion that the cloudiness of syrupus

lactucarii when present is owing to an excess of one or more of the acids contained in that substance, and is the more convinced of this as at times he has obtained a perfectly clear syrup by simply adhering to the formula of the Pharmacopœia, while at other times, using equal care, a muddy preparation would be the result, showing a difference in the substance employed.

Portland, Me., Oct. 22, 1877.

Remarks by the Editor.—The bitter principles of lactucarium are *lactucin*, *lactucic acid* and *lactucopicrin*, the first of which appears to be present in larger quantity and to be less freely soluble in water than the others. Aubergier already observed that the bitter taste of lactucin is destroyed by alkalies and not restored by acids; the syrup suggested in the above paper should therefore be carefully tested for its medicinal properties before it is substituted for the officinal syrup. Since Walz found lactucin to be freely soluble in acetic acid it is not improbable that lactucarium may be exhausted by dilute acetic acid, and the liquid preserved by sugar, without the alteration of any of its constituents.

ACTION of NITRIC ACID on SYRUP of IODIDE of IRON.

By Herman Betz.

Read at the Alumni Meeting, November 1.

At the last Alumni Meeting, Mr. Kennedy spoke of a paper which had been read before the American Pharmaceutical Association, wherein it was stated that some syrup of iodide of iron was suspected to be deficient in strength and colored with anilin-green, on account of its deep green color, and that the suspicion was proven to be correct by the liquid becoming colorless on the addition of a few drops of dilute nitric acid.

In examining into this subject, syrup of ferrous iodide, U. S. P., was first treated with nitric acid, which gave a dense black mixture from which free iodine was obtained by filtering and subliming the precipitate. To a small quantity of the same syrup a deep green color was imparted by a minute quantity of anilin-green; on adding afterwards a few drops of nitric acid the reaction did not differ from the foregoing one.

If dilute nitric acid, U. S. P., is added in a small quantity to syrup of iodide of iron, the same reaction takes place, but is not visible quite

as well until starch paste is added, when the color is at once changed to deep blue. This is also the case if the syrup is tinged with anilin-green and then treated with the dilute acid.

The same syrup, previously diluted with simple syrup, was treated in precisely the same manner, and the same reactions took place.

Anilin-green mixes well with syrup; if a small quantity of simple syrup is thus treated, the color will be destroyed by nitric acid, but not by dilute nitric acid, U. S. P.

Nitric acid does not change the color of simple syrup.

The color of anilin-green is destroyed by strong nitric acid, and the solution becomes nearly colorless, but on the addition of water the color returns, and the operator has it in his hand to make the shade of the color vary from iodine-red or brown to deep blue; but these colors are not permanent and will not appear if free iodine is present or has been liberated.

Now, if all the above-mentioned results are considered, it will be seen that nitric acid, pure or diluted, cannot be used as a test for the strength or color of syrup of ferrous iodide, for if it is taken strong the reaction will be so great that only the color of free iodine is visible, and if the dilute acid is used it will not destroy the color of anilin-green.

ON SOME CONTITUENTS OF HOPS.

By Emery Gilbert Bissell, Ph.G.

From an Inaugural Essay.

It is pretty generally supposed that lupulin contains all the active principles of the hop. Some doubt in regard to this having been recently expressed, the writer has endeavored to settle the question, with what success may be judged from the following experiments. The best of hops were selected, those as nearly ripe as could be found during picking; from these the bracts were carefully removed; the ends next to the achenes, to which part of the bracts most of the lupulin adheres, were trimmed off with scissors; the remainder of each bract was then passed between the thumb and finger to remove the remaining particles of lupulin, a magnifying glass being used from time to time to see that the work was thoroughly accomplished. This process is a difficult and tedious one, the lupulin adhering to the bracts with considerable tenacity. The bracts were then allowed to dry,

without the aid of artificial heat, and were found to shrink about three-fourths in weight; after much perseverance one troyounce of the dried bracts was obtained. Some difficulty was next experienced in powdering them; rubbing them with sand in a mortar was first tried, and found to be exceedingly slow work; grinding in a drug mill was next attempted, but found to be simply impossible; the method finally resorted to, and found to work nicely, was to cut the bracts in pieces with shears. This may readily be done by grasping the hand full of them and passing the shears repeatedly through many of them at once, sifting out the fine particles from time to time. The powder thus obtained was exhausted with stronger alcohol, and a tincture obtained possessing a bitter taste and some odor, neither of which would, however, hardly remind one of hops. The alcohol was distilled off from the tincture, and an extract obtained weighing seventy grains. To the distillate was added some water, the alcohol distilled off at a gentle heat, and the heat then raised. The distilled water was observed to have a slight foreign odor, but could not be recognized as the odor of hops; it had no effect on litmus paper, and produced no change in color with a solution of permanganate of potassa, evidently containing not more than the merest trace of volatile organic matter.

Of the extract obtained twenty grains was reserved for further experiment, the remaining fifty grains being tried in the following manner: One-half of it was given to a healthy person; no effect being experienced, in one hour the remainder was given; no effect whatever was noticed upon either pulse, temperature or respiration. The portion reserved was dried by means of the water-bath until it ceased to lose weight, after which the weight was found to be 1·013 gram; of this, ·225 gram, or about 22 per cent., was insoluble in water; the portion soluble in water was found to give the reactions characteristic of tannin, and also to contain a small amount of bitter extractive. The amount of the extract reserved was, however, too small to admit of many experiments.

I then endeavored to determine the nature of the tannin contained in hops, 700 grains of which were exhausted with boiling water, the decoction evaporated nearly to extractive consistence, and treated with alcohol to remove the gummy matter. The alcohol was evaporated and the residue dissolved in water; the percentage of tannin was then

estimated by means of a standardized solution of gelatin containing alum; only about ^{6} per cent. of tannin could be found. The remainder of the solution was then precipitated with neutral acetate and with subacetate of lead; the two precipitates had much the same appearance, and both were soluble in acetic acid. They were each thoroughly washed, then suspended in water and decomposed with sulphuretted hydrogen. The filtrate from each was found to contain the tannin, which gave a blackish-green color with ferric chloride, and precipitated a solution of gelatin containing alum. The two solutions were mixed and the tannin precipitated with an excess of common salt, from which an unsuccessful attempt was made to entirely free it.

For the final experiment six ounces of hops were taken and exhausted with boiling water; the decoction was concentrated, treated with alcohol, filtered, the alcohol evaporated off, the residue dissolved in water, and the percentage of tannin estimated as before; only a little more than $\frac{5}{10}$ per cent. being found. The solution, being acid to test paper, was carefully neutralized with ammonia and precipitated with neutral acetate of lead, a bright yellow precipitate being obtained; the filtrate gave no reaction with subacetate of lead and contained no tannin. The precipitate was thoroughly washed, suspended in water, decomposed with sulphuretted hydrogen, the precipitate washed until the washings gave no color with ferric chloride, and the filtrate evaporated to a small bulk, and shaken with ether in hopes that the tannin might be dissolved; the ether, however, failed to take up any of the tannin, and portions of the solution were therefore treated with the following reagents: tartar emetic, which produced a nearly white precipitate on standing; ferrous sulphate, no effect; sulphuric and hydrochloric acids at once produced precipitates; protochloride of tin, no effect; sulphate of copper, no effect; solution of potassa gave a dark reddish-brown color, but no precipitate; gelatin gave a precipitate on standing. The green-black precipitate with ferric chloride certainly indicates that this is not gallotannic acid, which in other respects it resembles, and the reaction with the mineral acids would seem to show with equal certainty that the tannin is not moritannic acid, which it is stated by Wagner to resemble.

ON GARRYA FREMONTI.

By David William Ross, Ph.G.

(*From an Inaugural Essay.*)

Having obtained from Prof. Maisch a small quantity of the branches and root of the above plant, which was mentioned in the "Amer. Jour. Phar.," 1875, p. 279, and 1876, p. 234, I endeavored to procure a larger supply from California, but without success; my experiments were therefore not as satisfactory as I could have wished, but I have nevertheless succeeded in isolating a bitter principle, which, from the tests, seems to be an alkaloid, for which I propose the name of *Garryina*. It was obtained by the following process: Two troyounces of the dried leaves were exhausted with alcohol, and about two pints of a dark-green tincture obtained. It was concentrated to about two fluidounces, an equal bulk of water was added, which precipitated the resinous matter. The filtrate had a dark-brown color, a very bitter taste and an acid reaction to litmus paper. The precipitated resin, when washed with water until tasteless, was of a light yellow color. Part of the filtrate was acidulated with muriatic acid and iodo-hydrargyrate of potassium added, which gave a white precipitate. Ammonia water added in excess changed the color to a dark greenish-yellow. Petroleum benzin or ether, agitated with the solution, did not extract any of the bitterness. Chloroform was agitated with the ammoniacal solution in six separate portions, being allowed to remain in contact each time for twenty-four hours, with frequent agitation, then separated and evaporated spontaneously; a light-brown very bitter substance was left, having an alkaline reaction, and being soluble in alcohol, slightly in water. It was dissolved in water acidulated with muriatic acid, digested with animal charcoal, and filtered. The filtrate was very bitter; after being evaporated over a water bath and set aside for a few days, a few cubical crystals were obtained, which had a bitter taste, were soluble in alcohol and water, and gave the following reactions: With sulphuric acid after a few minutes a purple color; with chromate of potassium and sulphuric acid first a red, then a yellow and lastly a green color. Its aqueous solution was precipitated by iodo-hydrargyrate of potassium.

Besides the garryina, the leaves contain resin, chlorophyll, tannin and sugar. They yielded five per cent. of ash, containing salts of potassium, calcium, iron and magnesium. The root contains the same alkaloid, answering to the same tests, and obtainable by the same pro-

cess, except that digestion with alcohol was found to be advantageous. The root contains also resin, starch and sugar, and yielded two and one-half per cent. of ashes, in which the same bases were found as in the ashes of the leaves.

ABSTRACT OF PAPERS

Read at the June and October meetings of the Alumni Association of the New York College of Pharmacy.

Examination of Water from a Well near Wichita, Kan. By J. W. Ballard, Davenport, Iowa.—The water was perfectly clear and not unpleasant to the taste. On evaporation to one-half its volume no precipitate appeared. A portion was mixed with hydrochloric acid and chloride of barium, resulting in a white precipitate, indicating sulphuric acid. Chloride ammonium, ammonia and oxalate of ammonium produced a dense white precipitate, indicating lime. The water was now freed from lime by precipitation and filtration, and ammonia and phosphate of sodium added; a white precipitate occurred, indicating magnesia. Search for the other elements failed to detect more than a mere trace, therefore the writer reported the water to contain the sulphates of calcium and magnesium. On evaporating to dryness, the amount of mineral matter was 112 grains to the gallon.

The owner of the well then reported the following facts in regard to it: Water dipped from the surface of the well with a bucket (the well contained 17 feet of water) produced no sensible effect on the system; that obtained from the bottom by a pump, if used freely—as a laboring man would in the warm season—produced griping and purging. A moderate use of the water seemed to be beneficial, as the owner had formerly been troubled with bilious attacks, etc., and now enjoyed excellent health, which he attributed to the use of the water. He was formerly much troubled with constipation, but now had regular habits.

Note.—An examination for the possible presence of organic matter in the water appears not to have been made.—Ed. Am. Jour. Phar.

The Granulated White Sugars of the Market. By Edward W. Runyon, New York.—It was found on comparison that the several brands of supposed A No. 1 granulaed sugars of the market produced syrups of different tints, which suggested an examination of their quality.

Samples were found containing a considerable proportion of ultramarin, which after several days' standing was deposited. Syrups made from sugars having the ultramarin impurities are discolored, being usually of a pale straw color.

This adulteration and additions of sulphate of tin, alum, etc., are used by refiners in the interest of dollars and cents, and are designed to neutralize the yellow tint in imperfectly refined sugars. The practice is known among refiners as adding the complementary color.

Unquestionably ultramarin adulteration is chemically injurious, being decomposed by fruit or organic acids with evolution of sulphuretted hydrogen, which produces a disagreeable taste; aside from this serious objection, the officinal syrups, instead of being colorless and bright, are tainted and dull in appearance. Pure sugars can be had by purchasing from first-class manufacturers, and paying a slight advance on the price of ordinary marketable granulated white sugar.

Quantitative Test for Carbolic Acid. By A. F. Nietsch, Brooklyn, N. Y.—The writer recommended the conversion of carbolic acid into a sulpho-carbolate, by digesting equal volumes of phenol and concentrated sulphuric acid until they have combined. Water is added to dissolve the sulpho-carbolic acid, which is filtered and treated with oxide of lead or carbonate of barium in excess. The solution of sulpho-carbolate of lead or barium is filtered, and decomposed with dilute sulphuric acid. The precipitated sulphate of barium or lead is washed, dried and calcined.

One hundred parts by weight of sulphate of barium is equal to eighty, and one hundred parts by weight of sulphate of lead is equal to sixty-two parts by weight of carbolica cid, from which the percentage composition of the tested sample can be easily calculated.

Note.—This process was recommended by Schaedler in 1872. See "Amer. Jour. Phar.," 1872, p. 352.—Editor.

Pellitory Root.—Mr. G. C. Close pointed out an error in the Dispensatory under the head of Pellitory. The statement that pellitory was a powerful irritant he had found incorrect. It seemed to have only mild stimulant properties, and was used considerably in tooth washes.

Note.—The fresh roots of both Anthemis Pyrethrum, *Lin.*, and

Anacyclus officinarum, *Hayne*, when applied to the skin produce redness and blisters; their virtues seem to depend partly upon volatile oil, but mainly upon acrid resin.—EDITOR AM. JOUR. PHAR.

Lobelia Inflata. BY CHAS. S. PLUMB, M.D.—The writer pointed out an inaccuracy of the U. S. Dispensatory in regard to the statement that lobelia root was used in medicine. The root, according to Mr. Plumb, is almost inert, and is not found in the market. The general characteristics of the leaves, as given by the authorities, is correct, except the conclusion that lobelia is poisonous. The writer maintained the view that relaxation was the principal effect, whilst several authorities had used the term prostration to designate the symptoms following the use of lobelia herb, which is wrong, because no stupor follows, no convulsions or permanent debility, in fact, no symptoms of a narcotic poison are observed as we see in those drugs properly called narcotics.

It was also stated, in contradiction to the Dispensatory, that the drug had no cathartic properties whatever, but it produced speedy and severe vomiting, attended with continued nausea, copious sweating and great general relaxation, as described in the Dispensatory.

The writer denounced as erroneous the statement that lobelia, in large or too frequently repeated doses, produced extreme prostration and death, preceded by convulsions. In substantiation of this latter statement, he remarked that he had taken very large doses, and had seen prescribed by several physicians repeatedly, doses of one-half to two or three drachms without any injurious effect following, even when the drug had been retained in the stomach.

The detailed experiments with this drug led to the conclusion that the common reputation of lobelia was far from the truth, and that its poisonous properties had come by association with nicotina without careful analysis of its medicinal properties.

Adulteration of Oil Origanum. By J. W. BALLARD, Davenport, Iowa.—The writer is aware that pure oil of origanum is sometimes hard to find, but the specimen that came under his observation a few weeks ago was so peculiar, at least to him, that he forwards a description.

The oil was bought for pure, labeled pure, and the price liberal. It was very light-colored and had an agreeable, though not a strong

odor. It would not mix with turpentine spirits in any proportion, but when shaken would give an opalescent mixture, and soon separate. It would burn readily, but without the dense smoke that the pure oil gives. On agitating with water, three-fourths of the oil remained mixed with the water, while one-fourth appeared at the top. This layer of oil floating at the top gave all the indications of being oil of origanum, mixed readily with spirits of turpentine, etc.

From the specific gravity, color of flame, etc., the writer concluded the mixture to be one-fourth oil of origanum and three-fourths alcohol.

ON A PERCOLATING AND FILTERING STAND.

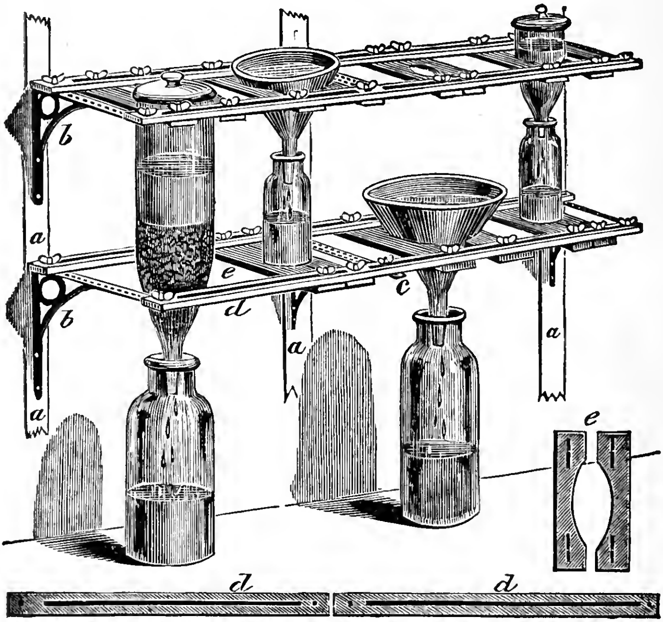
By Joseph P. Remington.

Most pharmacists are compelled to be economical of the space in their pharmacies which has been set apart for manipulations. They require the greatest amount of room for the show-cases for displaying their wares and for the accommodation of the dispensing counter and its accessories; this is particularly the case in large cities and towns, where property is relatively high in price, when it becomes an expensive luxury to possess a well-appointed laboratory, distinct and separate from the store, where all strictly chemical and pharmaceutical processes may be conducted out of sight of the customers and free from the interruptions that become so harrassing, and which, without great care, are apt to interfere so materially with the thorough performance of these duties. He who possesses plenty of room, however, and can extend at will his facilities for manufacturing has a great advantage, in this respect, over his less fortunate neighbor.

The writer has used, with a great deal of satisfaction, for the last four years a percolating stand, which is particularly adapted for the use of the pharmacist who has frequent demands for varying quantities of numerous galenical preparations, and who either makes them himself, or prefers to have all of the operations go on immediately under his own supervision. This stand was contrived with the view of accommodating vessels of different sizes and shapes, and the excellent wood-cut which accompanies this description will almost make comment unnecessary. It may be useful, however, to give the dimensions and some explanations.

Three upright strips (*a*), four and a half feet long, one and a half

inch wide and three-quarters of an inch thick, are fastened to the wall, as shown, two feet nine inches apart, over the working counter. Six iron japanned brackets (*b*), 15x9, are now fastened by screws to the upright strips, three of them in the same plane, the top of the bracket



eighteen inches above the level of the counter, and the other three in the same plane; the tops of these twenty-two inches above the tops of the lower set.

The longest limbs of the brackets are placed horizontally, and are perforated by drilling half-inch holes, one inch apart, along the edge of four of them (the outside edge is preferred), whilst two of the brackets (those designed for the middle supports (*c*) should have holes drilled on both edges. Upon the brackets the horizontal strips (*d*) are laid; these should be of black walnut or other hard wood, and are two feet nine inches long, one inch thick, one and three-quarter inches wide; a slot half inch wide, is cut into each of these horizontal strips through the middle, but not extending quite the whole length; the strip should be left solid for a distance of three inches from the ends. The cross pieces (*e*) are made of black walnut and are fifteen inches long, two

and a half inches wide, one inch thick; a slot half inch wide is cut in the same manner in them, but it does not extend the whole length, leaving one and a half inch solid at the ends. These cross pieces should be in pairs, and seven or eight pairs should be made, varying the curves, in order to better accommodate the various shaped percolators, funnels, etc., which may be used; the sides of the curved cross strips should be beveled, for the same reason. Iron carriage bolts, $\frac{3}{8}$ in., three inches long, with the nut replaced by thumb-screws, are used for fastening the horizontal long strips to the brackets, and also the cross pieces to the horizontal strips; iron washers should be used with the thumb-screws to prevent injury to the wood.

It will be seen that by this contrivance the horizontal strips may be made to approach each other (by inches, if desired) by slipping out the bolts and inserting them into the different holes in the bracket, and the cross pieces may be slipped along the length of the horizontal strips at will, or when they are needed to grasp the percolator moved to their proper position, and the percolator pushed up or down and adjusted to the proper height to suit the receiving bottle, and the thumb-screws can then be used to secure it, so that a solid, vice like grasp prevents the percolator from tilting or getting out of position.

Funnels for filtration can of course be readily accommodated by the stand. If a large percolator is used, the top may be run up to what is sometimes called the "second story," and adjusted by the cross pieces in the upper tier, the receiving bottle resting on the counter. Smaller operations could be carried on on the first floor, but if there is no more room here, and it is required to construct more processes on a smaller scale, cross pieces may be laid on the "first floor" horizontal strips and there secured, to rest the receiving bottle on. In fact, the plan may be greatly enlarged and is susceptible of indefinite multiplication, and if wall space can be spared a third, fourth and fifth floor, or tier, may be added.

The advantages of the stand are that many operations, which would ordinarily be scattered about the working counter or carried on in different parts of the store, may all be performed in a very limited space and hence can be watched and attended to more thoroughly. The percolators or funnels may be adjusted to a nicety, so that the beaks may extend into the receiving bottles just as far as desired, and when these are full, or require transferring, it is easily done.

There is no spilling of menstruum from tilting or liability of fracture to the apparatus, as is frequently the case where funnels are inserted into narrow-mouthed bottles and there become tightly jammed. When required, muslin strainers may be used upon it for collecting precipitates by tacking the corners of a square or oblong piece of muslin upon the horizontal strips, using a dish to collect the liquid upon the counter. It may also be used as a retort stand for holding flask, retort or still, for recovering alcohol under certain circumstances.

Philadelphia, Eleventh month 15th, 1877.

SODIUM SALICYLATE.

By George W. Kennedy, Ph.G.

Read at Social Alumni Meeting, November 1, 1877.

Sodium salicylate having rapidly gained favor in my section of Pennsylvania as a remedy for rheumatism, I have been compelled to make it for the use of our practitioners. At first my method was to saturate the acid with sodium bicarbonate at the time of dispensing the prescription. This plan was slow and unsatisfactory, and to replace it I have devised the following: Take of solution of pure white caustic soda, of 20 per cent. strength, at pleasure, saturate with salicylic acid of known purity by adding the acid until no longer dissolved; filter, and evaporate on a water-bath until by stirring a fine white powder is obtained.

As thus prepared, salicylate of sodium is freely soluble in glycerin, making a straw-colored solution, and in water to the amount of 50 per cent., which solution is yellowish, of a sweetish taste at first, becoming quite acrid and unpleasant after a little time. It is insoluble in the fixed oils, oil of turpentine, benzin and bisulphide of carbon, sparingly so in ether and 95 per cent. alcohol, though more freely when hot. Its exhibition in the dose of about 30 grains daily has been attended with some quite remarkable effects in some cases of rheumatism in which other remedies have failed.

STREET DUST.

By Henry G. Debrunner, Chemist.

It has been lately stated in several scientific periodicals that the dust of the active thoroughfares of Paris, London and other large European

cities, contained 35 per cent. of metallic iron, given by the shoes of the horses to the stones, besides from 30 to 40 per cent. of good glue from the hoofs. These data were by no means represented as exceptional ones, it being stated that they did not vary much for a period of over two months. The glue as well as the iron were intended to be recovered, the former very probably by extraction of the dust with boiling water, the latter by reduction of the resulting insoluble residue, now containing over 50 per cent. of metallic iron, in small blast-furnaces. Thinking that the dust of the most active thoroughfares of our smoky city should fully equal any "European" dust, at least in regard to the percentage of iron, I collected samples from different parts of our city, and subjected them to analysis, with the following results:

Dust from Thirtieth and Smallman streets, Pittsburgh. Sample taken Sept. 22, 1877.

Moisture,	1·2050 per cent.	Total loss on ignition, 46·8407 per cent.
Carbonic acid,	1·0400	
Glutin,	0·9210	
Bitumen and other volatile organic matter,	17·5720	
Fixed carbon,	26·1027	
Silicic acid,	30·4314	Ash, 53·1593 per cent.
Phosphoric acid,	2·1982	
Sulphuric acid,	0·9633	
Ferric oxide,	12·2203	
Alumina,	2·3132	
Manganic oxide,	0·0625	
Lime,	3·2174	
Magnesia,	1·4720	
Alkali chlorides,	0·2330	
Ammonia,	trace	
Loss,	0·0480	
	100·0000	

Metallic iron = 8·55 per cent.—in HCl extract 6·74 per cent. Glutin = 0·921 per cent. in aqueous extract. Soluble in water 1·10 per cent. (leaving 0·2 per cent. ash). Ashes on ignition, subsequent to extraction with hydrochloric acid, 41·5 per cent.—soluble SiO_2= 0·31 per cent.

Ashes from samples of dust taken from different parts of said streets amounted to 50·25, 50·91, 51·92, 49·94, 53·16, 52·25 per cent.

Samples of dust taken from center of crossing of said streets:

Moisture,	1·20 per cent.
Volatile organic matter,	18·65
Fixed Carbon,	27·90
Ash,	52·25
	100·00

This dust was of a deep black color. On ignition, combustible hydrocarbons—bitumen—originating from coal, were liberated, of which said dust coniained at least from 30 to 35 per cent. Previous to analysis the dust was sifted through a moderately fine sieve.

As to the estimation of glutin I used the following method: 100 grams of dust were extracted with strong boiling alcohol, to which a few drops of caustic soda solution had been added to render it slightly alkaline. The dust thus extracted was then dried on a water-bath to expel the alcohol, and boiled with 500 cc. of distilled water. The alcoholic extract contained a brown coloring matter, and decomposed organic substances in small quantity, for the extraction of which I had applied this treatment with hot slightly alkaline alcohol. The subsequent aqueous extract contained dissolved glutin, which was weighed after evaporation to dryness on a water-bath. It was finally ignited, and the weight of the ashes deducted from the one previously obtained.

In the following analyses the treatment of dust with alcohol was omitted; the glue was estimated on evaporation of the aqueous extract to dryness in a tared platinum dish, and deduction of the ashes on subsequent ignition.

	1.	2.	3.	4.	5.	
Moisture,	0·927	1·179	0·725	1·512	1·534	per cent.
Volatile organic matter,	9·928	5·734	6·152	2·492	3·143	
Fixed carbon,	6·847	10·295	13·874	7·524	20·108	
Ash,	82·253	82·792	79·249	88·472	75 215	
	100·	100·	100·	100·	100·	
Iron,	6·84	9·69	7·41	5·130	5·71	
Glue,	6·214	0·602	1·272	3·521	4·731	

No. 1 was dust from the horse-track on Penn street, near Union Depot, and was of a grey color. No. 2 was from Smallman and 31st streets, and also contained coal, recognizable by the liberation of combustible hydrocarbons—bitumen—on heating.[1] No. 3 was taken from main road of Black Diamond Steel Works, and was of a dark-grey color and contained coal. No. 4 was dust from 32d and Liberty sts., free from coal, and of a light-grey color. No. 5 was collected from Penn, between 30th and 31st streets. Some dust and debris was taken

[1] I am aware of the fact that glue, besides leaving a carbonaceous residue, also forms combustible gases on ignition, requiring, however, a higher temperature than necessary for the liberation of bitumen from coal.

from a road near East Liberty Stock-yards, Pittsburgh, and without being sifted yielded glue, 16·242 and iron, 5·722 per cent.

The abrasions from rails of the horse-track on Penn street form a grey, almost metallic, sandy powder, containing 32·12 per cent. of metallic iron partially non-oxidized, while in the other samples this metal existed in form of sesquioxide. The limited quantity of this material, although nearly as rich in iron as a poor ore, prevents any utilization.

As to the quality of the glue, it may be stated that it is very impure and has a rather bad odor. It however possesses all the characteristic properties of glue; its solution forms a jelly when cooled; tannin, alum and alcohol precipitate it flocculently, while it has at the same time adhesive power to a certain extent. Iron as well as glutinous matter, however, are present in too small a quantity to be of any technical significance.

Although badly disappointed, I am now fully convinced that these new branches of glue and iron manufacture "won't do" for Pittsburgh, while perhaps at the same time my analyses of street dirt may be of interest to some of the readers.

Black Diamond Steel Works, Pittsburgh, Nov. 17, 1877.

GLEANINGS FROM THE FOREIGN JOURNALS.

By the Editor.

Expressed Oil of Almonds.—J. D. Bieber, manufacturing chemist at Hamburg, communicates the following reagent as a reliable test for this oil: Equal weights of pure concentrated sulphuric acid, red fuming nitric acid and water are mixed and the mixture allowed to cool. The test is applied by mixing five parts of the oil with one part of the acid liquid, when *pure almond oil* will give a yellowish-white liniment; *oil of peach kernels* assumes red color of peach blossoms, turning to dark orange; *benne oil* turns pale yellowish-red, then dirty orange-red; *poppy* and *walnut oils* yield a somewhat whiter liniment than almond oil. This test permits the detection of 5 per cent. of peach kernel and benne oil.

Mixed with pure nitric acid, spec. gr. 1·40, *almond oil* yields a pale yellowish liniment; *peach kernel oil* a red, *benne oil* a yellowish-green, afterwards reddish, and *poppy* and *walnut oils* a white mixture.

It was found that the oil expressed cold or warm, from fresh almonds or such as had been kept up to ten years, gave the same reaction. Most of the commercial oil was found to be adulterated with the oil of either peach kernels or benne seed.—*Apoth. Zeit.*, No. 41.

Cantharidin.—J. Piccard observed the correctness of older observations, that cantharidin becomes soft at 210°C. (410°F.), and fuses at 218°C. (424·4°F.). F. Krafft having found its vapor density near 6·60, the author doubles the usually accepted molecular formula to $C_{10}H_{12}O_4$. When heated with hydriodic acid of about sp. grav. 1·8, it is gradually converted into *cantharic acid*, which, after purification, is crystalline, soluble in 120 p. cold and 12 p. boiling water, very soluble in alcohol, sparingly in ether, and not vesicating when its solution in glycerin is applied to the skin. It has the same composition as cantharidin, but it is monobasic.—*Ber. deutsch. chem. Ges.*, 1877, 1504—1506.

Nucin or Juglon.—C. Reischauer's analyses render it probable that this body is allied to kinone, $C_6H_4O_2$, but contains less oxygen. Its composition seems to be $C_{18}H_{12}O_5$. On mixing its alcoholic solution with a solution of neutral acetate of copper, a red coloration and a copious precipitate of bronze colored microscopic crystals is obtained, which have a metallic lustre, and when dried at 100°C. were found to contain 15·83 per cent. of copper.—*Ibid.*, 1542—1548.

Phosphide of tin is at present an article of commerce, and is technically employed in place of phosphide of copper for the preparation of phosphor-bronze. S. Natanson and G. Vortman have prepared it, 1, by heating a mixture of 3 p. glacial phosphoric acid with 1 p. charcoal and 6 p. tin; 2, by fusing glacial phosphoric acid with tin; 3, by passing phosphorus vapors over tin fused in a current of hydrogen (Vigier's method, 1861), and 4, by throwing phosphorus upon fused tin (Pelletier and Landgrebe's process, 1829). The products were silvery-white and foliaceous, contained between 96 and 98 per cent. of tin and were soluble in muriatic acid, with the evolution of phosphoretted hydrogen. If heated with nitric acid for a short time, then just sufficient muriatic acid added to dissolve the stannic acid, and again heated for some time, yellowish scales of a metallic lustre are left, which contain 75 per cent. of tin, and, when boiled with caustic potassa, yield a brown-yellow solution and silvery scales, containing

79·53 per cent. tin. The formula SnP requires 78·89 per cent.—*Ber. deutsch. chem. Ges.*, 1877, p. 1459—1461.

Compound of Thymol and Quinia. By C. Pavesi.—The author reports that he has obtained a crystalline compound which he calls citro-thymolate of quinia, by treating quinia with thymol and a small quantity of citric acid. Four parts of quinia are placed in a matrass or flask with 6 parts of oil of thyme and a sufficient quantity of alcohol to effect complete solution. The mixture is heated in a water-bath for a few minutes, afterwards allowed to stand during twelve hours, and then 2 parts of citric acid in powder added. The whole is again heated, filtered, and the liquid evaporated to a syrupy consistence. Upon cooling, a yellow matter is deposited in confused crystals. This substance is treated with boiling water and animal charcoal, filtered and evaporated at a low temperature; after twenty-four hours the salt is obtained well crystallized.

This crystalline compound of quinia, thymol and citric acid, is very white, moderately soluble in cold water, more soluble in boiling water, and very soluble in alcohol. It has a very bitter taste recalling that of oil of thyme. The presence of the three constituents in the crystals can be demonstrated by the use of suitable reagents; but the exact composition has not been determined by the author.—*Phar. Jour. and Trans.*, Sept. 22.

Hypophosphoric Acid.—When phosphorus is left in contact with air in a moist atmosphere, it yields an acid liquid containing phosphorous (H_3PO_3) and phosphoric (H_3PO_4) acids. Th. Salzer has recently found in it a new acid, which he calls hypophosphoric acid. It is bibasic and has the formula H_2PO_3. Its aqueous solution is colorless, inodorous and not altered by boiling unless evaporated to a syrupy consistence when it is decomposed by heat into phosphoric and phosphorous acids. Nitric acid does not affect it, until by concentration in the heat the decomposition just mentioned has taken place, when the whole is oxydized to phosphoric acid. Most of the other oxydizing agents have a similar behavior, except potassium permanganate, which oxydizes it slowly in the cold, but rapidly on boiling. The ordinary deoxidizing agents have no effect. It yields a crystalline precipitate of acid sodium hypophosphate in a concentrated solution of sodium acetate, and white precipitates with lime and baryta water, ferric chloride,

and with mercuric, mercurous and silver nitrates; the last two remain white on boiling.

A solution of hypophosphate does not precipitate the chlorides of platinum, gold or mercury; but yields with magnesium sulphate a crystalline precipitate soluble in ammonium chloride; with barium chloride, a white precipitate; with alum and zinc sulphate, gradually, gelatinous precipitates; with ferrous sulphate a whitish, with cobalt nitrate a reddish, and with cadmium sulphate a white precipitate.

The two sodium salts have the composition $NaHP_3,3H_2O$ and $Na_2PO_3,5H_2O$.—*Zeitschr. Oest. Apoth. Ver.*, No. 27—*Ann. d. Chem.*, Vol. 187.

Detection of Traces of Iodine.—E. Filhol recommends to extract the iodine in the usual manner, by evaporation with a little potassa to dryness, treating with alcohol, evaporating this solution, and redissolving the residue in a few drops of water; this is mixed with a few drops of muriatic acid, then with some chromic acid, and agitated with a little carbon bisulphide, which acquires a violet color. $\frac{1}{50}$ milligram of iodine may thus be detected.—*Zeitschr. Oest. Apoth. Ver.*, No. 27 *Jour. de Phar. et de Chim.*, May.

Mercurous Iodide.—Schlagdenhauffen has examined the various processes recommended for preparing this compound and arrived at the conclusion that, even after prolonged trituration of mercury and iodine in the proper proportion, there results a mixture of metallic mercury and mercurous-mercuric iodide. If prepared by double decomposition of mercurous salt (nitrate) and potassium iodide, a mixture results of variable proportions of the same constituents, and if a sufficient excess of potassium iodide is employed, the yellow precipitate disappears with the formation of potassio-mercuric iodide, leaving metallic mercury behind.—*Jour. Phar. d'Alsace-Lorr.*, 173—176.

Syrup of Ipecacuanha.—A. Martin proposes to prepare this syrup from the hydro-alcoholic extract of ipecacuanha, by dissolving it in water and evaporating the solution again to an extract containing 15 per cent. of moisture. A syrup corresponding to the requirements of the Belgian Pharmacopœia is obtained by dissolving 1·50 grm. of this aqueous extract in sufficient warm simple syrup to obtain 1,000 grams. The advantages of the process are exact and uniform strength, recovery of all the alcohol, and easy preservation without becoming mouldy like the simple alcoholic extract.—*Jour. Phar. d'Anvers*, 361—363.

Syrup of Orange Peel.—A. Martin obtains an excellent product by drying the orange peel, preferably the kind known as Curaçao, occurring in bands, by enclosing it in a tinned iron vessel containing a bottle half filled with burnt lime, and the cover of which is luted with flour paste and paper. After remaining for eight days in this desiccator the orange peel is dry enough, without having lost any of its aromatic principles, to be easily reduced to powder; this is then exhausted by precolation with water at the ordinary temperature, and the infusion heated to about 70°C. (158°F.) to coagulate the albumen, filtered and converted into syrup in the usual manner.—*Ibid.*, 364, 365.

Oil of Angustura-bark was obtained by Oberlin and Schlagdenhauffen to the amount of 1·9 per cent. It possessed the spec. grav. ·934, boiled at 267°C. (512·6°F.), and turned polarized light +5·4°. Iodine turns the warm oil to a green mass, gradually becoming thicker. Bromine changes to blue, purple and brown, leaving in the cold a hard, friable mass. Chlorine thickens the oil; potassium has little action; nitric acid colors gradually yellow and rose-red; chromic acid, with some ether and alcohol, produces a beautiful red color; iodic acid and alcohol rose-red, then orange; ferric chloride and ether carmine red, the coloration disappearing by more ether.—*Jour. de Phar. et de Chim.*, August.

Nitrate of pilocarpina is obtained in white lamellate crystals by displacing powdered jaborandi leaves with 80 per cent. alcohol, containing per litre 8 grams of muriatic acid; the tincture is distilled, the extract dissolved in water, filtered, rendered alkaline by ammonia, and repeatedly agitated with chloroform. The solvent is distilled off, the alkaloid exactly neutralized with nitric acid, the liquid filtered, evaporated and crystallized. The crystals are washed in a cylindrical percolator with cold absolute alcohol to remove coloring matter, and recrystallized from boiling alcohol in presence of some granular animal charcoal. The filtrate yields beautiful white crystals (about 5 grams for 1000 grams of the leaves), which are soluble in 8 parts of water at 15° C., in 7 parts of boiling absolute alcohol, and but sparingly soluble in the latter liquid when cold.—*Rép. de Phar.*, Aug. 25.

Pepsin.—Andouard scrapes the inner coat of the stomach, and adds to the mass table salt to precipitate the pepsin, as proposed by Scheffer ("Amer. Jour. Phar.," Feb., 1872). The precipitate is put upon a

dialyser to free it from sodium chloride; pepsin again dissolves, and is mixed with an equal weight of glycerin. This solution keeps well, and its activity is not impaired by keeping it for two years without special precautions.—*Jour. de Phar. et de Chim.*, Aug.

CULTIVATION of MEDICINAL PLANTS at HITCHIN.

By E. M. Holmes, F.L.S.

Curator of the Museum of the Pharmaceutical Society.

The neighborhood of Hitchin is one which is intetesting on many accounts. The spot which Dickens has immortalized as Tom Tiddler's Ground is within a few miles of the town. The geologist will notice here the outcrop of the London basin, and the antiquary will meet with much to examine in the way of flint implements and other ancient relics. The botanist will find in the spring abundance of the rare *Anemone Pulsatilla* within a few miles of the town, and cannot fail to admire the row of ancient box trees, with trunks fully a foot in diameter, and about twenty feet high, which are conspicuous by the roadside near the centre of the town. These are probably the largest and oldest box trees in England. A curious feature in this district is the straw plaiting, which is carried on almost mechanically by women, even as they walk along the streets or through the fields to their work; their eyes keenly observant of all around them, and their talk seasoned with remarks, often more shrewd than polite, upon the passers-by. On a Tuesday, which is the market day, the town often presents a busy scene, sometimes as mueh as £1,000 worth of straw plait changing hands in one day. This is chiefly bought up by middlemen from Luton and Dunstable, who supply the peasantry with prepared straws for the purpose. For the pharmaceutist, however, the chief attraction of course lies in the fields of medicinal plants which are scattered all around the town.

The plant which is most extensively grown in the neighborhood of Hitchin is the lavender (*Lavandula vera*, D. C.). The cultivation of this plant was commenced in 1823, by Mr. Perks, and at the present time is carried on by his son, and also by Mr. Ransom, who commenced its cultivation in 1847. It is to these two gentlemen that our readers are indebted for most of the interesting facts which are embodied in this paper. Both these gentlemen have received medals for the ex-

cellence of their productions, Mr. Perks for oil of lavender, and Mr. Ransom for essential oils and pharmaceutical products generally.

The crop at present grown is much affected by the presence of a disease which attacks the plants just as they are beginning to flower, and causes them to wither away by degrees. This disease occurs not only at Hitchin, but also at Mitcham (in fact, it appeared at Mitcham before it was known at Hitchin), and so far as I have been able to ascertain at all the localities in which lavender is grown. To such an extent has it occurred at Market Deeping in Lincolnshire that Mr. Holland, who formerly cultivated lavender there, has now ceased to grow it. The disease prevailed to a considerable extent this year, and on this account and by reason of the smallness of the crop, the price of oil of lavender will probably be unusually high.

The history of the cultivation of lavender reveals some curious facts which may perhaps throw a little light upon the probable cause of this disease. Formerly the plant was propagated by slips taken from the branches, for the plant does not ripen seed. Whether or not it has lost the property of ripening seed through cultivation, as has been the case with the rhubarb plant at Banbury, I have not been able to ascertain.

In the winter of 1860, owing to a very severe frost, nearly all the lavender plants were killed, and to secure a crop for the next year, instead of taking slips, the roots were parted, and from that time to the present the same mode of propagation has been continued. About this time (1860) the disease first appeared.

Plants which are obtained by parting the roots of one year old plants are much more vigorous and less liable to the disease than those obtainod by dividing the roots of those of two years' growth.

The first appearance of the disease is indicated by the leaves of one or more branches drooping and withering away; and the remainder of the plant becomes affected by degrees. When the root of a diseased plant is pulled up the rootlets appear fewer in number than in a healthy plant, and the woody portion from which the rootlets spring is often covered with a white filamentous mycelium, but sometimes only presents a dark color and wet appearance internally.

The appearance of the disease just as the plant has begun to flower, and the fact that the plants now come to maturity in about three years, whereas they used to last five or six years, seems to indicate that the

tendency to produce flower and foliage has been stimulated to a greater degree and caused a greater demand upon the root than it is able to meet. The vitality of the plant has probably been lowered by years of reproduction from the stem instead of in the way that nature has appointed, viz., by the seeds. The method of propagating at present adopted is certainly one that is very likely to continue the disease, since it may be latent in the divided root of apparently healthy plants. That the disease is not likely to be owing to difference in soil is shown by the fact that fresh soil or otherwise, manure or no manure, make no difference in its appearance.

The method of cultivation is as follows:

The harvest of lavender flowers is rarely over until the middle of September, so that it is not possible to get the ground cleared and ready for the fresh plants before the end of October or beginning of November. The ground which is to be planted is generally manured beforehand with thirty to forty-five tons of stable manure per acre, but manure is not applied afterwards until a fresh planting takes place. The roots of the old plants are parted sometimes from two, but preferably from one year old plants, and the sets dibbled in rows about eighteen inches apart. The young plants make a start in growth in March, if the weather be mild with gentle showers, and increase considerably in size in April and May, so that the tufts become on an average about a foot in diameter. If, however, there occur heavy rains so that the leaves are much splashed with soil, the growth is somewhat stopped. In hollows, or where the damp is liable to remain, the young flowering stems, if there be frost in May, are frequently nipped, and the plant either dies or does not send up fresh flower-stalks until the end of June, making the harvest a late one. Black frosts do not, however, injure the plants.

The sets, if made by parting the roots, flower the first year; if, however, slips from the branches are taken, they are not allowed to flower the first year lest the young plants should be weakened thereby, but the flower shoots are clipped down close to the stem.

In the second year every alternate plant is removed in the autumn and planted elsewhere, leaving the others one yard apart. The second year the plants attain a diameter of about 15–18 inches, and in the third year the tufts are from 2 to 2½ feet across.

Shade has a pernicious effect upon the plant; under the shadow of

trees they become starved and produce scarcely any flowers. The growth of other plants between the rows also injures the crop. Weeds too have to be kept down. In order to prevent injury to the roots of the lavender plants while removing the weeds, Mr. Perks uses an instrument of sufficient width to pass easily between the rows, and composed of a number of hoe-like blades, the upper portion of the instrument being like a plough. By means of this apparatus he is enabled to cut off the weeds just below the surface of the ground, and at the same time to avoid injuring the tender roots of the lavender. The plants grow best and produce most blossom when they have plenty of room and sunshine. If too crowded, flowers are only produced from the centre of the tufts and not from the sides where the plants come in contact with each other.

The weather has considerable influence upon the yield of essential oil. If the days are bright and sunshiny during June and July the yield will be a good one, but if wet and dull very often not half the average will be obtained. Mr. Perks informs me that a 200 gallon still will yield about $1\frac{1}{4}$lb. of essential oil in a good season, but in a bad one, as in the present year, barely twelve ounces.

The time at which the flowers are gathered also appears to modify the yield, Mr. Ransom giving as the result of his experience that the product is very much reduced if gathered after the first week in September, the largest quantity of oil being obtained about the middle of August.

In collecting the harvest, which usually begins about the first week in August, the flowerstalks of one plant are grasped as far as may be with one hand and a sickle is used with the other. They are (by Mr. Ransom) then packed in eight-bushel sacks, and carried direct to the still, about fourteen sacks going to a 1,000 gallon still; or they are tied up in bundles weighing about twenty-two pounds (by Mr. Perks) and as much as possible of the stalks afterwards cut off and the still then filled up with the flowers. The distillation is commenced at four or five o'clock in the morning, and the still is filled four times a day, the men leaving work at 10 P.M.

The distillation of each quantity takes about two and a half hours, the largest portion of oil coming over during the first hour and a half. A considerable time is of course taken up in filling and emptying the still. The flowers are trodden down in the still by boys, who for the

first day or two are often severely stung by the bees which cling most pertinaciously to the blossoms, and appear to be quite intoxicated with the honey of the lavender, especially towards the end of the season.[1]

The water which comes over with the oil during the first hour, being slightly impregnated with oil, is returned to the still, but that which comes over afterwards is allowed to run away.

The oil which comes over after the first hour and a half is either redistilled or sold as inferior quality. The refuse when removed from the still is thrown into heaps, and when decayed is returned to the lavender fields. In a good year the lavender yields from four to six Winchester quarts[2] of essential oil per acre, and as about fifty-three acres altogether are cultivated the average yield of oil for the whole of Hitchin is about two hundred and forty Winchester quarts per year.

The quality of the oil is said to be affected by the soil and situation in which it grows, so much so that Mr. Ransom informs me he can distinguish the oil obtained from different fields by the odor alone. The oil is improved by keeping, up to three years, after which it begins to deteriorate unless mixed with spirit.

Redistillation also improves the quality of the oil, but unless conducted by steam heat the loss sustained is not compensated for by increase in commercial value, the loss being nearly one pound in the gallon.

The stems are not distilled, as the oil obtained from them is of very inferior quality, and is so small in quantity that it does not pay for labor and fuel.

The lavender grown by Mr. Ransom is distilled by steam heat, by which any tendency to an empyreumatic odor is avoided.

Belladonna.—About eight acres are grown of this plant, from which extract is made on the spot. The plants are raised from seed, and being perennial are grown on the same ground from seven to ten years, when they are replaced by fresh ones.

The crop is not cut the first year, but in the middle of June of the second year, and again at the end of September. The plants usually attain the height of rather more than two feet, but if heavily manured they will grow much larger. It is found, however, that in plants

[1]After the first day or two, according to Mr. Ransom, the boys become so insensible to the poison that they feel but little pain when stung.

[2]A Winchester quart holds about five pounds avoirdupois.

which show large leaves and grow rapidly the medicinal properties are less powerful in proportion, even the odor of the plant being weaker.

This is somewhat analogous to what is known of the cinchona trees, in which as a rule, the smaller the leaves the larger the yield of alkaloid. About five pounds of extract are obtained from one cwt. of herb.

Hemlock.—Very little hemlock is grown, the wild plant being preferred. It is said to be plentiful in the neighborhood, nearly twenty tons of it being sometimes made into extract in one year by Mr. Ransom. From four to six pounds of extract are obtained from one cwt. of herb.

Squirting Cucumber.—Only two to three acres of this plant are grown every year, there being comparatively little demand for elaterium in this country. The plants are earthed up in winter like celery and require plenty of manure applied annually. The yield of elaterium depends much upon the weather, very little being obtained in a wet season. If the month of August is fine and dry the yield is not only larger but of superior quality. The drug as prepared by Mr. Ransom is of a fine ash green color and comparatively sweet odor. This result is obtained by pouring off the supernatant liquor as soon as possible after the elaterium has deposited. If this be not done, fermentation is soon set up and the product depreciated in quality. Although Mr. Ransom probably grows more than any one else in England, the demand is so small that some wholesale houses have often not purchased more than two ounces in twelve months. That which is exported goes chiefly to Russia.

Henbane.—About five or six acres of the biennial plant are grown on the average; but the quantity varies very much, being almost a total failure in some years. Mr. Ransom's experience corresponds with that of Mr. Usher, of Banbury, as regards the uncertainty attending the appearance of the plant from the seed. Indeed in one of the fields at Hitchin, in which lavender plants two years old were in blossom at the time of my visit, only the biennial henbane had come up, which had been sown before the lavender was planted there.

A small quantity of marshmallow is also grown by the riverside, where it does well.

The above are, I believe, the leading medicinal plants which are grown in the neighborhood of Hitchin.

Mr. Ransom produces at his extensive laboratory a very large number of extracts, essential oils and liquors, and many of these in very large quantity, using as much as 40 tons of dandelion root per annum. Some of the extracts are such as are rarely asked for in retail shops, but for which there must be local demands. Among these were noticeable the extracts of sarsaparilla, *Actæa racemosa*, *Chelidonium majus*, *Datura Tatula*, *Saponaria officinalis*, wormwood (*Artemisia Absinthium*), angelica (*Archangelica officinalis*), centaury (*Erythræa Centaurium*), pulsatilla (*Anemone Pulsatilla*), blessed thistle (*Carduus benedictus*), walnut (*Juglans regia*), white horehound (*Marrubium vulgare*), buckbean (*Menyanthes trifoliata*), St. Ignatius' bean (*Strychnos amara*), senega, and the alcoholic extract of belladonna and ipecacuanha. The extract of Ignatius' bean is used for epilepsy and goes chiefly to Australia and China. To give an idea of the extent to which some of these uncommon extracts are used, it may be stated that as much as thirty or forty pounds of extract of *Ignatia amara* is turned out annually. All these extracts are made in steam evaporating pans, the juice being in many cases expressed from the plants or roots under an hydraulic pressure of 300 tons.

A prominent feature in the laboratory is the apparatus for making scammony resin from the root. This is obtained by percolating hot spirit through the powdered root. As expression of the root after percolation would involve considerable loss, and the last portion of spirit has to be displaced with water, considerable trouble has to be taken in freeing the resin from aqueous extract. In dissolving the resin of scammony of commerce in ether a small amount of insoluble matter will often be found, which is probably matter of this kind. Economy of fuel is provided for as far as possible by causing the hot water from the steam pans, etc., to pass into a large tank from which it is pumped by the engine into the boiler, etc., as required. The latest improvements have been adopted, even to the use of a patent for preventing the escape of steam while allowing the hot water to escape.

In conclusion, one word of caution is necessary to those who may feel inclined to visit Hitchin. The lavender fields are a sight well worth seeing when in full flower; the handsome red admiral (*Vanessa atalanta*), the tortoiseshell (*V. urticæ*), the gorgeous peacock (*V. Io*), the brimstone (*Gonepteryx rhamni*), and even the clouded yellow butterfly (*Colias edusa*), as well as many commoner species, are to be seen in

great force hovering over the lavender flowers. But let not the visitor be tempted to chase the lovely insects, for most formidable and by no means beautiful is the harvest insect, which seems to have an equal predilection for lavender fields and manifests a peculiar desire to leave an impressive reminiscence with all who venture among the blossoms, and no one who has made its acquaintance there will ever forget Hitchin.—*Phar. Jour. and Trans.*, Oct. 20, 1877.

CARDAMOM CULTIVATION IN MYSORE.

Some time in February or March the felling party, one-half of them provided with axes, and the rest with large hack-knives for clearing the underwood, proceed to the forest and commence operations by building, near some stream, a temporary hut to shelter them at night. The next morning the head man of the party, who is necessarily well acquainted with the forest, and who has previously chosen the sites for the projected gardens, points out to the coolies the trees that are to be felled. Half of the party then commence to clear the underwood, while the remainder set to work with their axes and fell the large forest trees. The Coorgs have an idea that it is of great importance that the ground should be well shaken by the fall of some heavy tree, and if from any cause a tree does not crash down with sufficient force, they fell another across it. Each plot generally consists of about the tenth part of an acre, and care is taken to leave about twenty or thirty yards of jungle between each garden, as well as not to make too many gardens in one year, lest there should be a too great and sudden diminution of the moisture, which is so much required by cardamom plants. From fifty to one hundred gardens are made annually, until the whole jungle is under cultivation. If represented on a plan a cardamom jungle fully cultivated would be not unlike a checkered board. In May, during the early rains of the southwest monsoon, the young plants shoot up in all the cleared grounds, but especially near to the root and stem of the fallen tree. By the October following they will have grown three or four inches, and by the ensuing February will have attained a height of about one foot, with from eight to ten leaves on each plant. The seeds ripen in October, and in the fourth year, or about three years and a half from the springing of the plant, a small crop, called by the Coorgs "God fruit," will be gathered. At this

time each rhizome will have grown up two feet; the garden must be annually weeded. When they have reached the height of about four feet, or say in the third year, a little culling will be required, for each plant must have six feet of clear ground left round it. In removing superfluous plants, care must be exercised in preserving the strongest and healthiest specimens. In the fifth year the plants will give a good crop, and will probably continue to do so for the following seven years, when they will begin to present a sickly and exhausted appearance. It will then be necessary to select some large trees from the surrounding jungle, and fell them right across the sickly plots. This is generally done during the months of February and March, when the lands were originally prepared for cardamoms, but may also be done with great advantage some month earlier. Young plants will then spring up as before, and many of the old plants will have their stems and and racemes killed by the fall, but from their rhizomes fresh stems will shoot, and the plants will bear with increased vigor for the next eight years, when the same process of renovation will have to be gone through again. The year in which the forest trees are thus felled the cardamom plots naturally give but little or nothing, and during the ensuing year but a light crop will be gathered; but this very much depends upon the quality of the soil, and on this also depends the early or late coming into bearing of the original garden. A cardamom jungle, if thus carefully worked, never becomes exhausted, and the cultivation may be continued on the same land for an indefinite period. One rhizome will often have over twenty stems, and, as these die off (and they seldom last longer than seven or eight years), fresh ones spring up to supply their place. The fruit is occasionally borne on the upper part of the stem, but this is extremely rare, and I may mention that in Munzerabad I have never seen or heard of an instance of this departure from the ordinary habit of the plant. When from the stem four racemes are thrown out it is called by the natives the true or full crop; if three only, three-quarter crop; if two, half crop; and if one only, quarter crop. One raceme will have from eight to fourteen branches, and each branch from three to six pedicles. When the plant is grown under the most favorable conditions, these branches are grown close together; when, however, the conditions are unfavorable, the racemes are long and weak, and the branches far apart.—*Jour. Applied Science*, Oct. 1, 1877, from *Elliott's Planter in Mysore.*

THE ACID OF WILLOW BARK.

By D. B. Dott.

The chemistry of the willow seems to have been little studied, and what attention it has received has been almost entirely devoted to its active principle, salicin. All the information I have been able to obtain regarding the constituents of the bark is very meagre, the majority of works on chemistry and materia medica merely mentioning that salicin is extracted therefrom; while, curiously enough, the "Pharmacographia," of Flückiger and Hanbury, omits all notice of the subject. Neligan states (authority not given) that the bark contains resinous matter, gum, chlorophyll, tannin, an organic salt of magnesia, and salicin; and that is as complete an account as I have found in any of the other books.

When an infusion of willow bark is made the liquor is distinctly acid to litmus. In the preparation of salicin by Erdmann's process this acid is neutralized by the excess of lime, and the salt thereby formed passes into solution. On evaporating to dryness and exhausting the residue with spirit the salt is redissolved and remains in the spirituous solution after the salicin has crystallized out. The salt may be obtained by distilling off the spirit and allowing the residue to crystallize. These crystals are then purified by recrystallization from water. Thus prepared the lime-salt separates in the form of a cauliflower-like mass, composed of radiate groups of prismatic crystals.

A portion of those crystals when heated fused, and inflamed, left a residue of calcic carbonate, indicating an organic salt of lime. It was found that the substance lost weight but slowly in the exsiccator, and likewise in the water-bath. A portion of the air-dried salt was therefore dried in the air-bath at 130°C. 9·140 grs. lost 2·745 grs.=30·03 per cent. In another determination with a different crop of crystals 7·85 grs. lost 2·275 grs.=28·98 per cent. A quantity of the salt was then incinerated in a platinum crucible, the residue being treated with excess of sulphuric acid and the crucible again ignited. 6·41 grs. gave 4·00 grs. $CaSO_4$=1·176 grs. Ca=18·34 per cent. In the second determination 6·12 grs. gave 3·82 grs. $CaSO_4$=1·12 grs. Ca=18·35 per cent.

One or two methods for preparing the acid were tried, the following being the process finally adopted: To a solution of the lime-salt in water solution of oxalic acid is added—not in excess. The precipi-

tate is then separated by filtration, the filtrate concentrated and extracted with ether, which dissolves the acid. The ether being now driven off, a syrupy solution of the acid is left. A few ounces were prepared by this method and placed over sulphuric acid, under a bell-glass, for two days. The acid then remained in the form of a syrup, almost odorless, with an intensely sour taste. As in these respects it exactly resembled lactic acid, and seeing that the calcium salt in its crystalline form and in its percentages of H_2O and Ca corresponded with calcic di-lactate, there could be little doubt that the acid under examination was lactic acid. To make more certain, however, some further tests were applied. A little was heated in a test-tube, when water and carbonic anhydrid were given off, and a residue left which shortly solidified. A portion was then boiled with sulphuric acid, which liberated an inflammable gas, burning with a blue flame—no doubt, carbon monoxide. When a small quantity was heated with sulphuric acid and manganese dioxide, a vapor smelling like aldehyd was evolved. A portion of the acid was distilled and the fraction coming over above 130°C. was evaporated and treated with cold alcohol, which separated small white crystals having the form of rhomboidal plates, and in other respects resembling lactide.

From the acid as above obtained the zinc-salt was prepared by warming with excess of zinc carbonate, filtering, and allowing to crystallize. The crystals were pressed between blotting paper and exposed for a short time to the air. In these air-dried crystals the H_2O was determined by drying in the water-bath; 6·065 grs. lost 1·125 grs.= 18·46 per cent. In a second determination with another crop of crystals 9·275 grs. lost 1·695 grs.=18·27 per cent. The zinc was determined in the dry salt by ignition in the blow-pipe flame; 6·33 grs. gave 2·12 grs. ZnO=33·49 per cent. In another determination 7·58 grs. gave 2·55 grs. ZnO=33·64 per cent.

The above numbers are here compared with those calculated for the normal calcium and zinc salts of latic acid respectively:

$Ca(C_3H_5O_3)_2,5H_2O$.

		Found.		
	per cent.	I.	II.	mean.
H_2O	29·22	30·03	28·98	29·505
Ca	18·34	18·34	18·35	18·345

$Zn(C_3H_5O_3)_2,3\ H_2O$.

		Found.		
	per cent.	I.	II.	mean.
H_2O	18·33	18·46	18·27	18·36
ZnO	33·38	33·49	33·64	33·56

The ZnO is too high, owing either to an impurity in the salt or to a fault in the analysis; but I had not time to examine into the matter. The zinc-salt crystallized in four-sided truncated prisms, which were insoluble in alcohol.

I am unable to state from what species of *salix* the acid was prepared but as all the samples of bark I have examined gave acid infusions, it is not improbable that lactic acid exists in all the members of the Salicaceæ.—*Phar. Jour. and Trans.*, Sept. 22, 1877.

ON THE ALTERABILITY OF CALOMEL AND THE PRECAUTIONS NECESSARY IN ITS THERAPEUTICAL EMPLOYMENTS.

By M. Jolly, Pharmacien.

Owing to the report which appeared in the Italian pharmaceutical papers on the formation of corrosive sublimate in a mixture of calomel and sugar, the president of the Society of Practical Medicine engaged the author to make some experiments to clear up all doubt on this subject.

Calomel has a decided tendency to decompose into mercury and corrosive sublimate, and many physical and chemical agents facilitate this decomposition. The author has investigated the action of these various agents, and embodies his results in the paper before us.

Heat always causes decomposition to a greater or less extent. Perfectly pure and dry calomel, sublimed alone, takes a greyish tinge from the liberation of metallic mercury.

Light causes the change into mercury and corrosive sublimate to take place rapidly, as evidenced by the change in color.

One gram of calomel digested with 100 cc. of a 2 per mille solution of acid hydrochlor. for six hours, at a temperature of 104° Fahr., yielded 3 milligrams of corrosive sublimate.

The same quantity digested with 5 per mille solution of sodium chloride yielded at the end of six hours 1 milligram of sublimate.

A 2 per cent. solution of citric acid (to represent fruit preserves, in which calomel is often administered) caused the production of one milligram of sublimate.

The hydrochloric acid and sodium chloride represent the gastric juice. When calomel passes into the intestines, it comes in contact with the alkaline secretions of the bowels.

A ½ per cent. solution of sodic hydrate, after digestion for six hours at 104° Fahr. with one gram of calomel, gave rise to six milligrams of corrosive sublimate.

Under similar circumstances a 1 per cent. solution of sodic carbonate gave rise to 4 milligrams, and a 1 per cent. solution of calcined magnesia to 3 milligrams of mercuric chloride. One gram each calcined magnesia and calomel were mixed, and at the end of 24 hours were treated with distilled water. One milligram of sublimate was found. Lime acts like magnesia. Neither carbonate of lime nor magnesia had the least effect at the end of six hours.

From these experiments the author draws the conclusion that calomel when used therapeutically must not be mixed with inferior sugars, which are always acid or alkaline, nor with the alkaline chlorides and earths, solutions containing alkaline hydrates or carbonates, or mineral or vegetable acids.—*Chem. and Drug.*, Oct. 15, 1877, from *Gazette Médicale.*

VARIETIES.

The International Pharmacopœia.—In this Journal, 1875, page 474, a short account was given of the proceedings of the International Pharmaceutical Congress at St. Petersburg, in which it was stated that a preliminary draught by Dr. Méhu had been distributed among the delegates for examination, correction, etc., said draught to be returned to the committee at St. Petersburg for further revision.

At the "Congrès périodique international des sciences médicales," which recently (Sept. 9–15th) convened at Geneva, Switzerland, H. P. Madsen, from Copenhagen, stated that the International Pharmacopœia had so far progressed that it was translated into Latin, and would in a few months be ready for distribution among the different pharmaceutical societies in Europe for final revision.

A lively discussion followed, which resulted in the nomination of the following committee of eight (four physicians and four apothecaries): Dr. Pachiotti, Prof. of Pathology in Turin; Dr. Wilkinson, President of the British Association; Dr. Seguin, New York; Dr. Marion Sims; Prof. Gille, Brussels; Dr. Méhu, Paris; H. P. Madsen, Copenhagen.—H. M. W., from *Ny Pharm. Tid.*, 1877, p. 321.

The Metric System.—The Boston Society of Civil Engineers have forwarded to Congress the following memorial:

To the Honorable the Senate and the House of Representatives of the United States, in Congress assembled—

The memorial of the Boston Society of Civil Engineers respectfully showeth: That the incongruous weights and measures which have been in general use by this nation since its birth are inconvenient in computation, ambiguously named and

irregular in their ratios one to another; whereas the metric system, which was legalized in the United States in 1866, and has been adopted by nearly all the governments of Europe and America, has decimal subdivisions, like the federal coinage, a uniform nomenclature and very simple relations between its several units.

That the following-named seventeen organizations have assured your memorialist of their co-operation in petitioning your honorable body to make the metric standards the only legal standards after some date to be fixed several years in advance, viz.: Boston Society of Medical Science; Boston Society of Medical Observation; the Belles Lettres Society of the Illinois Wesleyan University, Bloomington, Ill.; St. Joseph's Medical Association, St. Joseph, Mo.; St. Louis Medico-Chirurgical Society; New England Association of Gas Engineers; Boston Homœopathic Medical Society; Engineers' Club of St. Louis; San Francisco Microscopical Society; Middlesex Mechanics' Association, Lowell, Mass.; St. Louis Medical Society; Alameda County Medical Association, Oakland, Cal.; Chamber of Commerce, Richmond, Virginia; Mt. St. Mary's Seminary of the West, Cincinnati, O.; NewHaven Medical Association; Massachusetts Medical Society; Maine Medical Association.

That the following resolution was proposed in the forty-fourth Congress, as appears from the Congressional Record for May 8, 1876, but was never voted upon:

"*Resolved*, That the heads of the executive departments of the government be, and they are hereby, requested to report to this house, at as early a date as practicabe, what objections, if any, there are to making obligatory in all governmental transactions the metrical system of weights and measures, whose use has been authorized in the United States by act of Congress, and also how long a preliminary notice should be given before such obligatory use can be introduced without detriment to the public service, and that they are also requested to state what objections there are, if any, to make the metrical system obligatory in all transactions between individuals, and what is the earliest date that can be set for the obligatory use of the metrical system throughout the United States."

Your memorialist therefore prays for the adoption by your honorable body of the said proposed resolution.

Silver Cleansing Solution.—Take of ammonium carbonate 1 ounce, dissolve in 4 ounces of water, mix this with 16 ounces Paris white. A moistened sponge is dipped in the powder and rubbed lightly over the surface of the metal, after which the powder is dusted off, leaving a brilliant lustre.—*Druggists' Circular.*

A New White Paint.—Native barytes, or barium sulphate, is mixed with pulverized stonecoal and tar, and exposed to an intense heat, so as to convert into barium sulphide. The latter being soluble can be dissolved out, and to the clear solution is added a corresponding quantity of zinc chloride in solution, when zinc sulphide will be precipitated, while barium chloride remains in solution. To the solution of barium chloride is added white vitriol (zinc sulphate), when a precipitate of barium sulphate will be formed and zinc chloride left in solution, which latter can be filtered and again employed to precipitate the barium sulphide.

The two precipitates obtained as above, namely, zinc sulphide and barium sulphate, are well washed, mixed, dried, heated to a cherry-red, then thrown into cold water, and finally ground in water and dried. The white pigment thus obtained covers well, and is well suited to mix with oil, as a substitute for lead, especially where sulphur compounds exist or may be generated.—*Scientific American*, Oct. 6

Simple Tests for Flour Adulterations.—Dr. Himly, Professor of Chemistry at the University of Kiel, has suggested a method by means of which any person of ordinary intelligence may test the amount of adulteration of flour. It is based upon the fact that chloroform is specifically lighter than nearly all the substances usually employed for these adulterations, such as lime, chalk, barytes, plaster, marble, bone-powder, etc , while the genuine flour is again lighter than chloroform, in which none of the above-named substances are soluble. The testing process is simple, and all the apparatus required is a small test tube about $\frac{3}{8}$ inch in diameter, and 4 or 5 inches long. A teaspoonful of the flour to be tested is placed in the test-glass and chloroform poured on to fill the vessel to about three-quarters of its length, when it is well shaken and then placed in an upright position, so as to remain undisturbed until the various substances mixed together have had time to find the level assigned them by their specific gravity, the flour swimming near the surface at the top of the vessel, while the mineral bodies will sink to the bottom. It should be observed that unadulterated flour often shows a slight filmy deposit of a grayish or brownish color, which it must be supposed is stone-dust, produced in grinding. A white deposit, however, will invariably indicate an adulteration with one or another of the substances mentioned above. If the materials are weighed before and after separation, the amount or degree of adulteration may be pretty accurately ascertained.—*Ibid.*, Oct. 27, 1877.

Tests for Adulterations of Oil of Cloves and Oil of Pennyroyal.—Oil of cloves is often adulterated with carbolic acid. This may be detected by agitating the suspected oil with fifty parts of hot water; decant and slowly evaporate the aqueous portion to a small bulk. Add one drop aqua ammonia and a very little chlorinated lime. If carbolic acid is present, a green color, changing to a permanent blue, is developed.

Pure oil of cloves congeals into a crystalline mass, with total loss of its odor, when agitated with an alcoholic solution of potassa.

Oil of pennyroyal is mixed with oil of peppermint as an adulterant. To detect this mixture I have found the following process very effective:

Take of Hydrate chloral, ... ʒi
Sulph. acid, C. P., . . . ʒss

Rub together until a liquid is formed, which make clear by adding alcohol, drop by drop. Place a few drops of this solution in a watch-glass, with an equal amount of the oil, then rub together with a glass rod. If oil of pennyroyal is present, it will turn an olive green, but if it is pure oil of peppermint the color will be a cherry red.—*Med. and Surg. Rep.*, Sept. 15, 1877.

Dangerous Vinegar.—The Board of Health of the District of Columbia has condemned five carloads of vinegar sent there from Chicago, on the ground that it is not a genuine article, and is injurious to health. An analysis of the so-called vinegar has been made. It appears, according to the report of the Board of Health,

that the vinegar contains $54\frac{54}{100}$ grains per gallon of anhydrous sulphuric acid, combined with lime, to form a sulphate of lime equivalent to $117\frac{26}{100}$ grains of gypsum per gallon, and besides that 5 grains of free sulphuric acid per gallon. The Board also reports that this sample was taken from an invoice of more than 1,000 barrels brought there to be sold as vinegar, and that it is likely to find a ready sale on account of its low price. The report concludes as follows: "When we think that oil of vitriol (sulphuric acid) can be bought at 5 cents per pound, and that a pound of said acid would render a barrel of fluid as acid as the strongest vinegar, the wonder will ceace that it is sold cheap. This, therefore, is a fraud upon commerce, and a dangerous substitute for vinegar." The fraud and danger are more general than the great mass of people will readily believe. It is asserted that probably one-halt the vinegar sold at city groceries is a rank poison, with either sulphuric or other objectionble acids for its base.—*Ibid.*, Sept. 8.

Detection of Free Sulphuric Acid in Wine and Vinegar.—Nessler proposes to cut filtering paper into strips of 30 to 40 centimeters, and to dip the lower end into the liquid, which will be drawn up by capillary attraction, and evaporating above will there leave the paper, after 24 hours contact and subsequent drying in a water-bath, of a brown or black color; the presence of a minute (less than 0·5 per cent.) quantity of sugar increases the delicacy of the test.—*Phar. Cent. Halle*, No. 40.

Adulterations of Red Wines.—W. Bachmeyer proposes to mix about 5 cc. of the wine with an equal bulk of nitric acid, spec. grav. 1·2. A wine which has been artificially colored is thereby decolorized in a few minutes or within about one hour, while the natural red color of wine is not affected after several days, unless an excess of the acid has been added.—*Chem. Centralbl.*, No. 42, from *Polyt. Jour.*

Wine Adulteration.—The "Bien Public" says that the falsification of wines with fuchsin, and the dangers to the public health arising from that practice, have obliged the government to take active steps for its repression.

At first the examination of the wine was made at the stores of the merchant, but this was found to be useless, and the adulteration continued. A special commission has now been appointed to inspect the liquor at the wine-shops, and samples are submitted to analysis exactly according to the English system. If the presence of fuchsin or any other dangerous ingredient is established, the seller is severely punished.—*Dublin Med. Press and Circ.*, Oct. 31.

Poisonous Tin.—An ordonnance of the Parisian police, which was adopted some years since, ordered all tin-ware manufacturers and traveling workmen to employ

exclusively fine tin for covering copper vessels which are intended for cookery. It has been proved, by recent analyses made at the instance of the Council of Hygiene of the Seine, that this order is systematically disregarded. It has been found that specimens of the metal employed in tinning such vessels contained relatively large quantities of lead, which is liable to be dissolved, and thus exercise poisonous effects. The police have been ordered to make inspections of the tin factories in future, in order to check this practice.—*Ibid.*

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, Nov. 19, 1877.

The meeting was called to order by Vice President Chas. Bullock; the minutes of the last meeting were read and approved,

Prof. Maisch presented an engraved likeness of Dr. Hermann Hager, on behalf of Dr. Fred. Hoffmann, of New York, who had on a previous occasion presented to our college quite a number of other pictures of the distinguished chemists and scientists of Europe. On motion of Mr. Shinn, the Registrar was directed to return the thanks of the meeting for the same.

Mr. Mattison called attention to some specimens of malt extract, showing the effects produced by long continued heat with atmospheric contact, in contrast with those obtained by evaporation by means of a vacuum pan. In the former case the heat attained was about 220 to 225°F., and the extract was of a dark-brown color, transparent, very sweet, and evidently contained much sugar; in the other case, the temperature never rose above 130°F., and the extract obtained was light-brown, somewhat opalescent, less sweet, and contained nearly all the dextrin unaltered.

Prof. Maisch said that dextrin was easily altered by heat, which accounted for the different appearance of the two extracts; but from this it did not follow that the officinal extracts, made by the pharmacist by the aid of judiciously applied heat, must necessarily be impaired by this treatment and inferior to those made in vacuo; while the color did change from the alteration of the extractive, the virtues of the extracts were still retained.

Mr. Shinn stated that with proper and efficient refrigeration the evaporation of tinctures in the pharmaceutic still, introduced to the notice of pharmacists some 25 years since, proceeded much faster than in the open air with constant stirring of the liquid.

Prof. Maisch presented specimen of the Anacahuite wood obtained from Cordia Boissieri, and recommended in 1860 as a remedy for consumption; numerous trials made with it about that time in the hospitals of several European cities proved it to be of no remedial value; chemical investigation, likewise, yielded nothing of importance.

Prof. Maisch showed the white incrustation of the branches of a shrub sent by Mr. Wm. B. Addington from Hot Springs, Arkansas; the incrustation obtained by immersion in the spring waters consisted principally of carbonate of calcium, with

traces of iron, some magnesium and notable quantities of lithium; the examination was made in the College laboratory by Mr. Betz.

Mr. Shinn presented a specimen of so-called rock soap from California, which, mixed with an equal quantity of soap, is employed there as a detergent; it was thought that in composition it was a silicious talc. Mr. Neppach stated that a similar article was obtained on the coast of Oregon.

Prof. Remington was called to the chair while Mr. Bullock gave some account of the seeds of Sophora speciosa, in which an apparently new alkaloid has been recently observed by Prof. H. C. Wood, Jr., of this city; one-half of a seed is said to be sufficient to produce delicious exhilaration, followed by a sleep lasting one or two days, and a whole seed is sufficient to kill a man. Through the kindness of a correspondent, in San Antonio, Texas, Mr. Bullock had obtained a sample of the seeds which he exhibited; these are somewhat irregular in shape, with a general disposition to an oval form, the large ones having a longitudinal diameter of $\frac{60}{100}$ of an inch, and a transverse diameter of $\frac{45}{100}$; their color varies from pale to dark red, the testa is horny, from $\frac{3}{100}$ to $\frac{5}{100}$ of an inch in thickness, the interior is a white oily kernel, having a slightly bitter taste. The seed yields its coloring matter to dilute but not to strong alcohol; nor has it yet been determined in what part the medicinal activity of the bean resides, but the probability is that it is in the testa. The seeds are contained in a pod of yellowish-brown color varying from 1 to $2\frac{3}{4}$ inches in length, and enclosing from one to five seeds. When a further supply, which has been promised, shall have been received, the chemical character of the constituents will be worked out. Prof. Wood, Jr., proposed to name the new alkaloid *Sophoria*.

A sample of berries was presented by a member present to whom they had been sold as *nutgalls*; they were recognized by Prof. Maisch as orange berries or small immature oranges.

Mr. Boring exhibited a specimen of fluid extract of glycyrrhiza, made by a process of insuccation, published by Mr. H. Biroth in the Chicago "Pharmacist," his method being essentially the exhaustion of 16 troyounces of the concised root with 4 pints of water containing 8 fluidounces of glycerin, followed by another 4 pints of water, and the whole evaporated to the measure of a pint; the objection to this process, in Mr. Boring's opinion, was the unnecessary amount of evaporation required to bring it to the proper bulk.

This latter preparation induced considerable discussion relative to the best means of disguising the taste of bitter medicines, particularly that of quinia. Prof. Maisch asked whether the members had noticed the occurrence of a precipitate on mixing aqueous solutions of quinia and ammoniacal glycyrrhizin. Mr. McIntyre stated that it had been noticed by him, and Prof. Maisch suggested that this might in part account for the tastelessness of the mixture. Mr. Boring stated that it was very important to exclude all alcohol from the quinia mixtures where the taste had to be masked.

Mr. Boring called attention to some of the products of a company organized in this city for the purpose of utilizing the carcases of animals not useful for food; the skins are first removed, the hoofs and foot bones are kept separate, from which neats foot oil is prepared; tendons are used to make glue, the remainder of the carcas is placed in close boilers and subjected to the action of the vapor of petroleum benzin;

this removes all the fatty matters which are obtained by distilling off the benzin, the remains are then used as fertilizers.

Mr. Boring also presented a sample of wild cherry bark, which was finely powdered for the purpose of adulterating guarana.

Prof. Maisch also presented, on behalf of Mr. Gustavus J. Luhn, of Charleston, fossil remains obtained from the phosphatic deposits of South Carolina; they consisted of teeth, vetebræ and other bones and various shells, and are used for fertilizing purposes.

There being no further business, the meeting adjourned.

T. S. Wiegand, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Philadelphia College of Pharmacy.—The Board of Trustees has appointed Mr. Thos. S. Wiegand actuary. The office was created for the purpose of making the library and museum of the College accessible to the students and others. Since the beginning of October the actuary has been at the College on every week day, Saturdays excepted, between the hours of 3 and 10 o'clock P. M. This arrangement will continue throughout the lecture season, for the special convenience of the students. During the spring and summer the actuary will be at the College every afternoon between 3 and 6 o'clock. This arrangement will enable members and others to consult the works contained in the library, and examine the collection of drugs, chemicals, etc., during the day time and at hours convenient to most, and all are invited to make use of the facilities thus afforded.

The Board of Trustees has also ordered the purchase of another lantern, to be used for illustrations during the lectures in connection with the oxyhydrogen microscope.

Alumni Association Philadelphia College of Pharmacy.—The second social meeting was held Nov. 1st, 1877, in the College hall, and called to order by President Mattison; about forty members present.

The report on anilin green in syrup of iodide of iron, volunteered at the last meeting by Mr. H. Betz, was read. (See page 581.)

A paper on "cell structure," by President Mattison, was illustrated by microscopic specimens, and was the basis of considerable discussion on the respective doctrines of spontaneous generation and its reverse.

Mr. Kennedy, of Pottsville, Pa., read a paper on salicylate of sodium, which is extensively used there in rheumatism. (See page 592.)

Dr. Miller exhibited specimens of expressed oils of hemp seed, laurel berries and cherry pits, and stated that the first-mentioned was used in Germany to impart the green color to sapo viridis. He also remarked that expressed oil of mustard seed was an excellent substitute for olive oil for most culinary purposes.

The same gentleman announced his intention of giving at the next meeting some

of the more important facts, illustrated on the blackboard, connected with the Latin declensions as applied to pharmaceutical nomenclature.

Adjourned to meet Dec. 6th, 1877.

WALLACE PROCTER, *Secretary*.

The Vermont Pharmaceutical Association held its annual meeting at Rutland, Oct. 24 and 25, Mr. M. K. Paine, of Windsor, presiding. In his annual address the President alluded to many practical points, and strongly advocated the manufacture of all pharmaceutical preparations by the pharmacist. Professor Markoe lectured on the metric system, illustrating his remarks by various apparatus, models and diagrams. Several papers were read on subjects pertaining to pharmacy, and the following officers elected for the ensuing year: President, A. W. Higgins, Rutland. Vice-Presidents—W. H. Huntington, Rochester; Geo. A. Crossman, Brandon. Secretary, C. S. Boynton, Brandon. Treasurer, E. C Lewis, Rutland.

The next meeting of the Association will be held at St. Albans, in Oct., 1878.

Alumni Association St. Louis College of Pharmacy.—At the meeting held Nov. 20, President H. Lindemann in the chair, papers were read by Mr. F. F. Reichenbach on the syrups of the hypophosphites; by Mr. F. Henn on dialysis and dialyzed iron, and by Mr. R. Hunstock on the preparation of syrups by frigid percolation.

California College of Pharmacy.—The annual commencement was held on the evening of Nov. 16, at Pacific Hall, San Francisco, when, after introductory remarks by Prof. J. LeConte, the valedictories were delivered by Prof. W. T. Wenzell, on behalf of the faculty, and by Mr. N. Rogers on behalf of the graduates.

The graduating class for 1876 consisted of Nathan Rogers, Fred'k E. Ray and H. R. Harris, and for 1877 of J. A. Bauer, J. M. Curragh, John Devine and Edward Selzer.

The exercises, which were enlivened by orchestral music, were followed by a social reunion of the students' Adelphi Society, at which the party enjoyed themselves with dancing for several hours.

Pharmaceurical Society of Great Britain.—At the first pharmaceutical meeting of the session, held Oct. 3, the professors of the pharmaceutical school and the examiners of the council made their annual reports, after which the examination prizes were distributed, and Mr. Wm. Southall delivered the inaugural address of the session.

At the meeting held Nov. 7, Prof. Redwood read a paper on *the poisonous effects of yew leaves,* relating the case of an attempted abortion by means of a decoction of the leaves, a quantity of the latter having also been taken with a fatal result. In the discussion following, allusion was made to the assertion sometimes met with, that the decoction of yew leaves was not poisonous, but the leaves only produced fatal results, which, however, does not appear to be the case. The examinations by Lucas and Maviné were also referred to, resulting in the isolation of an alkaloid,

taxin, occurring in the leaves and in smaller quantity in the fruit. Several members stated that they knew of the pulpy part of the fruit being eaten with impunity, but could not say what effects might be produced by the seeds. Mr. Gerrard, who was examining the constituents of yew leaves, had thus far obtained a body which, though precipitated by phosphomolybdic acid, was not precipitated by other alkaloidal reagents, and appears to be a glucoside. The president, Mr. Williams, mentioned that in this and other cases of poisoning by yew leaves, local inflammation had been produced which was the character of irritant oleoresinous bodies, and he apprehended that this would turn out to be the nature of the poisonous principle in this case.

Mr. Holmes briefly described the differences between the common English and Irish yew, the latter having erect branches, with leaves more or less tufted, whence its name "fastigiata."

Mr. F. M. Rimmington read a paper on *Sweet Spirit of Nitre*. In a paper published in "Phar. Jour. and Trans.," Nov. 3, the author described the processes of the London Pharmacopœias of 1746, 1788, 1809 and 1836. The formula of the present British Pharmacopœia he considered unnecessarily complex, particularly inasmuch as it directs to suspend the process after a certain amount had been distilled, and to cool the apparatus in order to add some more nitric acid to the contents. Spirit of nitre, free from aldehyd and other oxidized products, will keep four to six months with but little change, in bottles filled and well stoppered; any addition of water greatly accelerates decomposition. A spirit containing 4 or 5 per cent. of nitrite of ethyl is a fair standard of strength for medicinal use, but the process of the Pharmacopœia had not yielded in the author's hands a spirit of that strength. An ounce of HNO_3 is required to produce one ounce of nitrite of ethyl, and in its production about 2 oz. of spirit, sp. gr. ·835, will be decomposed and one ounce or more of water formed. The spec. grav. of the medicinal spirit ought not to be higher than ·845. Two different samples had been kept for seven months, in corked bottles, not quite full; one made with alcohol, ·825, by the formula of 1746, had decreased in strength from 18 to 14 per cent. of ether, and its acidity was then equal to ·182 per cent. of nitric acid; the other, made by the formula of 1836, with alcohol, sp. gr. ·838, was in the same time reduced from 3 to 2 per cent. of ether, while the acidity was equal to ·367 nitric acid. The author estimated the quantity of ethylic nitrite by distilling the spirit from chloride of calcium.

Professors Attfield and Redwood opposed the assumption that the oily liquid separated by calcium chloride was pure nitrite of ethyl, but stated that it contained also alcohol, aldehyd and probably some other compounds.

Mr. Holmes read a paper entitled *Notes on Casual Drugs*, which cannot well be abstracted, and which we intend to publish in our next number.

The German Apothecaries' Society held its sixth annual meeting at Leipzig, Sept. 5 and 6, Director Wolfrum presiding. The transactions were mainly confined to the consideration of the law proposed by the chancellory of the German Empire for the regulation of the practice of pharmacy, and which was amended and then adopted. The next annual meeting will be held at Coblence.

Austrian Apothecaries' Society.—The sixteenth annual meeting was held at Vienna, Oct 15 and 16, Director Schiffner in the chair. The Society consists of 495 active, 43 corresponding and 72 honorary members. The annual reports of the Directory and the Treasurer were read, and the usual routine business transacted. Dr. R. Godeffroy delivered a lecture on the reactions of the cinchona alkaloids, illustrated with experiments by means of the camera.

The Austrian Pharmaceutical Society held its third annual meeting at Vienna, Sept. 10 and 11, Mr. G. Hell presiding. Besides the routine business, the Society discussed the subjects of pharmaceutical education and of the revision and reform of the laws regulating the practice of pharmacy.

The Swiss Apothecaries' Society held its thirty-third annual meeting at Lenzburg, Aug. 16 and 17, Prof. E. Schaer presiding. The affairs of the Society were discussed, the trade in secret remedies received due attention, and several communications were made relating to the analyses of articles of food and to a collection of oils of various species of Eucalyptus.

EDITORIAL DEPARTMENT.

The Friends of this Journal have very generously supplied us during the past year with a large number of original communications and essays, many of which are of more than ordinary value, and for all of which the Editor feels under obligations to the contributors. We trust that they will continue to show the same friendly interest in the future, and we take occasion to again invite our readers generally to furnish us with accounts of their observations made at the prescription counter or in the laboratory, and with communications of general pharmaceutical interest.

The Business Editor, we are informed, has also had cause to value the promptness of most of our readers in the timely remittance of their subscriptions, and he invites those who have overlooked the matter to make good their past omissions.

The Philadelphia Drug Exchange tendered a very pleasant and creditable entertainment to the drug trade and others on the evening of October 16. The spacious auditorium of the new Association Hall was well filled, and the proceedings consisted of a brief address by the president, Mr. Wm. M. Wilson; a very interesting address, sketching the history of the drug trade of Philadelphia, by Mr. Wm. Gulager; an entertaining lecture, with numerous chemical experiments, by Professor R. E. Rogers, and an exhibition with the projecting microscope by Mr. D. S. Holman, the whole interspersed with vocal and instrumental music.

On the third floor of the building a display of chemical and pharmaceutical preparations from the laboratories of Philadelphia manufacturers was arranged,

and under the direction of Dr. J. G. Richardson a large number of microscopical preparations and the effects of polarized light were shown.

The rooms were kept open also on the following day and evening and were visited by a large number of ladies and gentlemen.

Churchill's Tincture of Iodine.—Under this name a preparation has been recently employed in several parts of the United States, about the composition of which there seems to be some uncertainty. The "American Practitioner" for November copies the formula marked I from Churchill's "Diseases of Women," 1864, and mentions two other formulas, one of which, No. II, we find in Gaillard Thomas' "Diseases of Women," Philada., 1868, page 248. It is difficult to understand why this should be called a *tincture*, and though iodine is very freely soluble in glycerin, it probably does not dissolve to the extent directed. The third formula mentioned in "The Practitioner," we have since been informed, was obtained from a professor of obstetrics in a Western medical college, but we have not had time to ascertain in which medical work it had been published; we give it under No. III.

I.		II.		III.	
Iodin. pur.,	℥iiss	Iodinii,	℥ss	Tinct. Iodinii,	
Potass. iodid,	℥ii	Glycerinæ,	f℥i	Acid. carbol liq. *āā*	p. i
Spir. rectific.,	f℥xii			Hydrat. chloral.,	pt. ii
Alcoholis,	f℥iv				

The preparation, which is locally applied in certain uterine diseases, does not appear to be known in Great Britain by the name under which it was sought to introduce it in the United States. We observe, for instance, Dr. E. J. Waring ("Practical Therapeutics," 1871, p. 350) quotes Churchill as having used the "caustic tincture of iodine," without, however, giving a formula for it. P. Squire's "Pharmmacopœias of the London Hospitals," 1874, does not mention any such preparation, but has two under the designation *Causticum Iodi*, of which IV is employed at the hospital for diseases of the skin, and V at the Consumption Hospital. In the same connection the *Linimentum Iodi* may be mentioned, which was admitted into the British Pharmacopœia of 1864 (No. VI), but reduced in strength in the edition of 1867 (No. VII).

	IV.	V.	VI.	VII.
Iodine,	ʒi	ʒi	℥i¼	℥i¼
Iodide of potassium,	ʒi	ʒii	℥ss	℥ss
Rectified spirit,	—	f℥ss	f℥v	f℥x
Water,	fʒii	—	—	—
Camphor,	—	—	—	℥¼

It should not be overlooked that the weights and measures of the above formulas are those of the British Pharmacopœia, the ounce weighing 437·5 grains, and the fluidounce being one-twenty-fifth smaller in volume than the fluidounce of the U. S. P.

The last formula (VII) is nearly identical with that for *Liniment ioduré vésicant* of Néligan, which Dorvault ("l'Officine," p. 596) gives as follows: Iodine 10, iodide of potassium 4, camphor 2, alcohol 60 parts.

Quackery in the Garb of Piety.—We have received several letters asking for information about a nostrum which is extensively advertised in a style somewhat similar to that adopted by a quack, "whose sands of life had nearly run out" a number of years ago, but who seems to be at the bottom of the present enterprise, or else has been successfully copied by another. The latter pretends to be a minister of the gospel and a former missionary at Para, where he asserts to have become acquainted with the wonderful restorative properties of this compound, which consists of extract of *corassa apimis* eight drachms, extract of *selarmo umbelifera* four drachms, powdered *alkermes latifolia* three drachms and extract of *carsadoc herbalis* six drachms. In his compassion for unfortunate sufferers, this good and pious quack offers to send this wonderful remedy, securely sealed and accompanied by directions and some excellent advice, for the modest sum of $3.30 by express or $3.50 by mail, which price includes the government stamp, and is just what it costs him; he seeks no other reward than the satisfaction of doing good and the blessing of an approving conscience. His means make him independent, and he goes to all this trouble merely because the drug stores cannot be relied upon to procure new remedies of pure quality.

To inquirers we have simply to state that there are no plants in the Amazon valley, or anywhere else, bearing the above names, and this alone should be sufficient to stamp the enterprise as an imposition, merely undertaken for the purpose of catching the dollars of dupes.

A quack of the same stamp, simulating piety and frankness with the view of the more readily drawing the money of the credulous, was exposed by the "Philadelphia Times" of November 14. His prescription for the sure and speedy cure of consumption, etc., which he offered to put up at $3, was as follows:

Extract Asiatic cannabis sativa, two ounces; extract Asiatic halish sativa, three ounces; verbena hastata, two drachms; extract diasma, three drachms; pulverized cinchona bark, two ounces; extract cashgar leaves (blood root), three ounces: Inulin, one drachm; loaf sugar, one pound; rum or gin, half pint; cold water, one pint.

Forged Diplomas.—Under date of October 27, the following note was received by one of the faculty:

"Disreputable persons are trading in diplomas of the Philadelphia College of Pharmacy. They were given to graduates who are now deceased. The proposition is to erase the name of the dead graduate and insert any name to suit the case. The price of the black sheepskin is $100—cash in confidence."

The note was signed "An alumnus of P. C. P." It is scarcely necessary to state that such a communication is not suited for any action. If such a forgery has been committed, we should think that every alumnus having such knowledge would put the officers of the college into a position to act intelligently in the matter, by furnishing proof or pointing out the direction where to obtain it.

The Tenth Dilution.—No. 39 of the "Pharm. Centralhalle," relates that a pharmacist, having received a prescription of a homœopathic physician of Vienna for a certain quantity of *belladonna, X dilution,* dispensed distilled water, and was a short

time afterwards requested to still more dilute the medicine, *because it was too powerful.*

Correction.—Our readers will please correct the words "4 parts" and "30 parts," on page 513, lines 3 and 4, to 4 *times as much* and 30 *times as much cold water.*

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Transactions of the International Medical Congress of Philadelphia. 1876. Edited for the Congress by John Ashhurst, Jr., A.M., M.D., etc. Philadelphia: printed for the Congress. 1877. Large 8vo, pp. 1200.

This stately volume is mainly occupied by the addresses delivered before the Congress and the papers read and discussions had before the sections. The remaining portion is taken up by historical notes on the preliminary arrangements, the minutes and lists of officers of the Congress and of its nine sections, and of the delegates and invited members. The Congress convened Sept. 4, 1876, and held daily sessions until Sept. 9, when it adjourned. The volume proves that a large amount of valuable work has been performed on that occasion.

A Guide to Therapeutics and Materia Medica. By Rob. Farquharson, M.D, Edin., etc. Enlarged and adapted to the U. S Pharmacopœia. By Frank Woodbury, M.D. Philadelphia: Henry C. Lea, 1877. 12mo, pp. 410.

The alphabetical arrangement adopted in this work will be found quite convenient. Under each heading the different chemical and pharmaceutical preparations are enumerated together with their relative strength and doses, and their physiological and therapeutical action arranged in columns in a diagrammatic form; for poisonous substances the proper antidotes are also given. The introductory chapter is devoted to "General rules for prescribers."

In preparing the work for the use of the American practitioner, the editor has very properly adapted it to the U. S. Pharmacopœia, a labor which appears to have been very well performed, and which will be appreciated by those who use the handy volume.

Materia Medica for the Use of Students. By John B. Biddle, M.D., Professor in the Jefferson Medical College. Eighth edition. Revised and enlarged, with numerous illustrations. Philadelphia: Lindsay & Blakiston, 1878. 8vo, pp. 462. Price, cloth, $4.

We have on former occasions noticed some of the preceding editions of this work, which appears to be very useful for the *medical* student, and has been revised so as to include all the new medicinal agents of any importance which have found favor in the United States. In looking over the volume we find its statements generally correct; among the oversights we mention that the water of crystallization has been omitted in the formula Na_2CO_3 for crystallized carbonate of sodium, and that the typographical error of some or the earlier volumes of the last Pharmacopœia is again reproduced upon p. 104, where Spiritus Chloroformi is stated to be a solution of a troyounce of chloroform in twelve fluidounces of *diluted* alcohol.

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